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## ANALYSIS AND COST OF READY-TO-SERVE FOODS

AN INTRODUCTION BY


GRAHAM LUSK, PH.D., SC.D.*

Professor of Physiology of the Cornell University Medical College, and Scientific Director of the Russell Sage Institute of Pathology

NEW YORK


Very early in his scientific career, in the year 1877, Atwater turned his attention to the question of the nutrition of the people. The many valuable bulletins published by the United States Department of Agriculture testify to much splendid study into the problems of food for the multitude. And yet little practical use has come of it all. Why then talk about nutrition? A critic writes, "We need food, but do we need books to remind us of our need? And as an unanswerable challenge another critic cries, "Does Professor X eat his own diet?" It is truly stated that normal nutrition is associated with appetite, and it is therefore argued that the appetite is not to be controlled by knowledge. One has only to recall the appetite for drink to realize the utter fallacy of this argument. A glass of beer or a glass of wine taken at the end of a wearisome day is not of demonstrable evil and may be of benefit to the digestion. Yet to follow the appetite when it leads to drink in excess is of injury to the body, the mind and the economic welfare of the individual and therefore inimical to the welfare of the state.

But why repeat such self-evident truths? Has not enough been said? Are not words wasted in repetition of the obvious? In defense one may recall a scene at the New York Academy of Medicine in which Sir William Osler maintained that the essence of successful teaching consisted in "Reiteration, reiteration, reiteration." One of the audience present qualified this definition by adding the words, "without irritation." If successful teaching be accepted as "reiteration without irritation," let the following presentation be an attempt in that direction.

Food has been defined as a well-tasting mixture of foodstuffs of such a composition that the body is not injured by its use, and of sufficient quantity to maintain the body in good condition.

One may consider this definition under three headings.

1. Value of flavor.
2. Importance of composition.
3. Importance of quantity.

### VALUE OF FLAVOR

It is known to all that the sight of appetizing food "makes the mouth water." It is known, however, to comparatively few that the sight of such food "makes the stomach water" in the same sense. That is to say, a flow of gastric juice is set up in the stomach. This flow is accelerated by the actual taste of the food, so that a large amount of valuable digestive fluid is set to flowing merely through the psychic appreciation of flavor. When food is taken without appetite, this important preliminary flow of gastric juice does not take place and proper digestion is rendered more difficult. Not only this, but the glands lying deeper down in the intestines yield their digestive juices in larger measure, the greater the quantity of gastric juice which passes from the stomach into the intestine. The appetite is like a magic wand influencing the whole of the digestive process. Fear and anger lead to a parched throat, and in an entirely similar manner to a parched stomach, so that food cannot be well digested under these circumstances. It is familiar to all that the sight, smell or sound of anything repellant will cause loss of appetite. The writer has seen an artist faint when an operation of Dr. Carrel became the subject of a dinner conversation where men and women were present. The appetite is favored by the extraneous refinements of civilized life, such as a spotless table cloth. It would also be affected by the cleanliness of the preparation of the food could one always look behind the scenes. It is affected by the atmosphere of cheer at the table. Neither scolding parents nor snarling children facilitate the digestion of the Christmas dinner.

The question of flavor in all its ramifications is therefore a very important one. It is one of the pitfalls of the prescribing physician, because he is very likely to believe that what he likes is excellent and what he detests is bad. The great multitude of people like pickles, but some do not; the latter class must not argue that pickles are therefore injurious. The common foods of life, such as potatoes, tomatoes, and bananas, all have their personal enemies based on dietetic prejudices which are largely imaginary, although as a psychosis the manifestations of repulsion are very real.

### IMPORTANCE OF COMPOSITION

A celebrated school mistress once asked that a book be written which would tell her what apple sauce was without introducing the terms protein, carbohydrate and fat. Alas, that is impossible. It would be like teaching architecture without mentioning brick, granite and marble!

But the knowledge is not recondite. Protein is the characteristic solid constituent of muscle. The protein framework is essential for the manifestation of

* This is the introductory to a report of an investigation of the ready-to-serve foods in the Childs restaurants of New York, by F. C. Gephart, Chemist of the Russell Sage Institute of Pathology, in affiliation with the Second Medical Division of Bellevue Hospital. The complete report, in book form, with Professor Lusk's introduction, may be obtained of the American Medical Association, price, ten cents; postage two cents extra.

those properties whose aggregate is called life. And besides this, water and salts enter into the organization of the living particles. These salts are as varied as are those of the sea water and they are essential to living things. In vertebrates, salts are further used to build the larger framework of the bones. When various molecules of protein are united in a certain definite order with water and salts, life is possible. If the definite order is disturbed, death results. Life depends on the arrangement of the particles. One recalls the story of the Yankee who, during the winter months, sold a "sure cure for potato bugs" with the caution "not to be opened till wanted for use" and with the promise of instructions for use inside the package. In the summer time, on opening the package the farmer found two small cubes with the directions "place the potato bug on one cube and press firmly with the other." Death not only takes place through such disarrangement of the particles, but also it may follow on the influence of a poison which prevents the proper functioning of the living thing.

A peculiarity of living tissue is that a part of its protein is constantly being broken down and replaced by repairing material. It is as if structural units were constantly being dissolved out of a building and automatically replaced by new ones. In the human body about two and one-half parts out of a thousand of its protein are thus daily renewed. It is as if one structural unit out of every four hundred in a building were replaced with a new one every day. For this reason one must eat protein. This is repair protein to replace that lost in the wear and tear on the machinery of the cells.

Protein is the essential constituent of all meats, fish and eggs; it is a large constituent of milk, and mixed with fat is the essential constituent of cheese. Protein is not a simple chemical substance, but it may be broken into seventeen different fragments. This is what happens when protein is digested in the stomach and intestines. These fragments are absorbed by the circulating blood and when they are carried to the different tissues the fragments are put together in a manner which is characteristic for each tissue. Suppose each structural unit in a building were made up of seventeen parts, all of them different, such as gold, silver, iron, lead, tin and so on, and when one of these larger structural units went into the scrap heap suppose there were always present a supply of all the several varieties of new parts necessary to build another like it; then one has an analogy of what happens. One might imagine that these seventeen different units might be arranged in different ways, depending on the use to which the particular structural unit was put. In like manner, it comes to pass that the protein of milk is split into fragments in the baby's stomach and these various fragments are absorbed by the blood and are carried by this medium to the different organs of the baby's body, there to build up the structure of each particular organ after its own particular way. The seventeen different chemical units known to occur in protein may be joined together in different ways so that 350 million times a million different combinations are possible even though only a single representative of each unit is used (Abderhalden). In this they resemble the multiplicity of combinations possible with the letters of the alphabet. On account of this it is possible to build liver protein or muscle protein out of milk protein. In the muscles of fish and in the white of egg there are again other variations in the order of those letters of the protein alphabet, and therefore, these proteins are distinctive. These proteins contain all the seventeen units and are therefore capable of repairing any tissue. It has been suggested that such proteins be called proteins of Grade A.

Proteins are also found in all vegetable foods. The vegetables contain some complete proteins, that is, those which have the full array of seventeen individual units, but they also contain some incomplete proteins, that is, those which are deficient in one or more of the characteristic units which are necessary to build up animal protein. These incomplete proteins have little or no value in nutrition. Thus it comes about that it requires a much larger quantity of vegetable proteins (which include complete and deficient proteins) to maintain the machinery of the body in repair, than when animal protein is given in the form of meat, eggs, fish, milk or cheese.

It must be remembered, however, that when a person is engaged in active labor or excessive exercise he may be able to obtain a very liberal supply of proteins of the higher grade in the large quantity of vegetable foods of which he partakes. This gives a scientific explanation to the saying which has become proverbial, "the railways of the country have been built on beans."

Attention is called to the generally overlooked value of milk protein.

There is no danger of protein undernutrition in this country. The general trend is toward protein extravagance, that is, its ingestion and destruction in excess of the needs of repairing the tissues. This is due to the fact that to most normal men a beefsteak represents the choicest of good things. Here appetite triumphs over reason and economy. If one listens attentively one hears again a rumbling note, "Would Professor X eat his own diet?"

Yet the matter of enormous meat consumption is one of serious economic importance which is not to be lightly tossed aside. The following table prepared by Rubner indicates the quantity of meat consumed per head of population (adults and children) in the various nations of Europe and also the increase in the consumption of meat in Germany during the last hundred years.

TABLE 1.—RUBNER'S TABLE OF MEAT CONSUMPTION IN EUROPE

| | Present Consumption of Meat Per Capita Per Year, Pounds | Consumption of Meat in Germany in Different Years | |
|---|---|---|---|
| | | Date | Pounds |
| Germany | 115 | 1912 | 115 |
| England | 105 | 1900 | 102 |
| France | 74 | | |
| Belgium and Holland | 75 | 1892 | 72 |
| Austria-Hungary | 64 | 1873 | 65 |
| Russia | 59 | 1840 | 48 |
| Italy | 23 | 1816 | 30 |

There is little doubt that excessive consumption of meat constitutes a grave and unnecessary economic waste. The increased cost of food falls most heavily on this item of indulgence and its ever-increasing price follows as much the law of supply and demand as does the price of champagne, and, for the same reason, the price of flavor for those who have the price. It is part of the spirit that demands the motor car, the luxuries of life as well as its necessities.

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As regards the utility of carbohydrate and fat in the food, one may especially attribute to them a value as fuel. They are oxidized in the body and keep the body warm and when work is accomplished they furnish the energy with which to perform it.

The carbohydrates consist in sugars and starches. The latter are convertible into sugars in intestinal digestion. One can speak of cornstarch as equivalent to the sugar into which it is convertible. Cane sugar has essentially the same value in nutrition as starch. The two belong to the same group and yet are not identical, and so the layman must learn the cumbersome term carbohydrate as the common name for the physiologically identical sugars and starches.

The great staple starchy foods include rice, potatoes, bread, beans, macaroni and corn. These are the cheapest food fuels. They all contain protein but their principal constituent is starch, which when converted into sugar is as much a fuel for the body as gasoline is for the automobile.

Fat is taken in the food with most meats. It is largely consumed as lard and also as butter. Nuts contain 50 per cent. of their weight as fat. The fats are a far more costly fuel than the carbohydrates, although they serve a similar purpose in nutrition. The advantage of taking a diet which includes a mixture of carbohydrates and fats lies in the fact that the intestine is not called to excessive effort in caring for the digestion and absorption of a large quantity of a single food material, and that equivalent amounts of fat are less bulky than carbohydrates. The disadvantages of a large use of fat are, first, its original cost, and, second, the fact that its ingestion diminishes the intake of vegetables and hence the amount of cheap vegetable proteins, thereby making fat indirectly a still more expensive food.

There are important accessory factors to be discussed concerning food. These are the fibrous roughage of cellulose, the salts of the diet and the so-called vitamins.

Sylvester Graham used unbolted wheat flour with which to make Graham bread. The cellulose here produces a freer movement of the bowels. Of similar import is the use of spinach, cauliflower, lettuce, cabbage, asparagus and tomatoes. These substances have almost no fuel value, but they can be prepared to serve with large quantities of fats or oils, and they furthermore give flavor and variety to the fare of the table.

The salts of the food are extremely important. Thus, if calcium be withheld from the diet of experimental animals the bones become porous and finally break. Such conditions are not found in human life, for the foods ingested always contain sufficient salts to replace those lost from the body. It has been found that when meats are oxidized they yield an acid ash, whereas vegetables usually yield an alkaline ash. It has been recently shown by Blatherwick that of all vegetables potatoes yield the greatest amount of alkaline ash for the use of the body, and that this alkali is most effective in dissolving and eliminating uric acid from the system. In the light of this, potatoes are highly desirable, not only in health, but also in the gouty condition. Yet one of the dietetic fads of the day is to eliminate potatoes from the bill of fare, a really absurd practice, always excepting the cases of those individuals who manifest personal repugnance to potatoes.

Finally, there is a class of substances which exists in minute quantities in some foods and little or not at all in others. This class is called that of the vitamins. Thus, individuals who live almost exclusively on polished rice acquire the disease of beriberi, and a similar monotonous diet of bread develops scurvy. A diet of bread and water does not maintain the strength of the organism and has been used as a disciplinary method. Minute quantities of vitamins are found, for example, in meat, in butter and in unpolished rice, but they are absent or deficient in polished rice, bread and lard. The vitamins are absolutely necessary for the proper harmonious maintenance and growth of the body. This statement should cause no alarm. There is no beriberi in the United States, for here rice does not ever form the dietary mainstay of the individual. There is practically no scurvy, although it has been known to occur in almshouses, where motives either of economy or graft have deprived the inmates of suitable food.

Summarizing, one can state that in the United States there is no protein, or salt or vitamin deficiency in the habitual diet, and there is plenty of roughage in the form of cabbage, sauerkraut or other vegetable foods available to him who desires it.

### THE QUANTITY OF FOOD

Generally speaking, the mass of food ingested serves two functions, the protein is of use in the maintenance and repair of the cell machinery, and the carbohydrate and fat furnish fuel to this machinery that the motions of life may continue. Protein given in excess also serves the purpose of fuel, as do carbohydrates and fat. In the oxidative destruction of these materials in the body heat is liberated. When 1 gram of fat is burned sufficient heat is produced to raise the temperature of 1 liter of water 9.3° C. (= 16.5° F.). Since the unit of heat measurement or the *calory* is that quantity of heat required to raise 1 liter of water 1° C., it follows that 9.3 calories of heat are set free whenever 1 gram of fat is oxidized. The heat liberated in the body when 1 gram of fat is oxidized is exactly the same as when it burns outside the body. The similar value for starch is 4.1 calories per gram. In the case of protein, 4.1 calories are liberated whenever a gram of this material is oxidized within the organism. When, therefore, protein is consumed in excess, the excess has no greater fuel value than an equal weight of starch. Here then are the fuel resources which keep the body warm, maintain the heart and respiration, and the activity of the other organs, and enable the muscles to perform work. Since every machine requires more fuel when it is active than when it is at rest, it follows that the greater the activity of the body the greater will be the requirement for fuel.

The figures in Table 2 may be accepted as estimates of the fuel requirement of a man weighing 156 pounds (70 kilograms) during a twenty-four-hour period:[1]

TABLE 2.—DAILY CALORIC REQUIREMENTS OF 156 POUND (70 K.) MAN

| | Calories |
|---|---|
| Absolute rest in bed without food | 1,680 |
| Absolute rest in bed with food | 1,840 |
| Rest in bed 8 hours, sitting in a chair 16 hours, with food | 2,168 |
| Rest in bed 8 hours, sitting in a chair 14 hours, walking two hours, with food | 2,488 |
| Rest in bed 8 hours, sitting in a chair 14 hours, vigorous exercise 2 hours, with food | 2,982 |

1. Lusk: The Fundamental Basis of Nutrition, Yale University Press, 1914.

It appears from this that that great class of human beings whose business it is to sit at their desks or to watch machinery, and who may walk to and from their work, require 2,500 calories. In their class are included writers, draughtsmen, tailors, physicians and other professional men, clerks, accountants, etc. Mental effort is accomplished without any increase in the quantity of energy required.

Individuals who stand at their work, such as bakers, dentists, car conductors, decorators and glass workers, require about 3,000 calories. If muscular labor be constant, more is required. Thus carpenters making tables and painters painting furniture require 3,300 calories. Farmers require 3,500 calories, stone masons 4,500, lumbermen 5,000 and over, and a man riding in a bicycle race during twenty-three hours requires 10,000 calories a day.

These are facts which at the present time are scarcely open to dispute. The sorrowful part of it is that outside a narrow circle they are practically unknown. Physicians sometimes starve their patients and the babies entrusted to their care, in blissful and childlike ignorance of what they are doing. The poor, 50 to 60 per cent. of whose income is spent for food, waste their money in the purchase of beautiful labels or relatively expensive and unnutritious foods. A publisher employing several thousand individuals says that his employees buy from choice the products advertised in his magazines. Children of the poor are sent to buy food for the family and the whole expenditure of half the family's income is effected in an atmosphere of unfathomable ignorance. Yet if one seeks to help, one is informed that one must not meddle with the appetites, and the funny man of the newspaper makes a witticism on the subject of "highbrow" information.

In spite of the inevitable attitude of the humorous editor, it is well to remember the severity of the winter's cold, the lack of employment, the suffering of the poor, which create a situation very far from humorous.

How can relief be given? One suggestion is to sell 1,000 calories of food in a well-balanced ration as cheaply as possible. Beans are cheap. But you don't like beans. Does Professor X eat his own diet? If beans are not acceptable, then how about macaroni and spaghetti? The meal shown in Table 3 is made up of 1,000 calories and contains 16 per cent. of those calories in protein, one-sixth of the protein being in the form of animal proteins of Grade A, and the rest being in vegetable proteins. The remaining 84 per cent. of the calories are nearly equally divided between carbohydrate and fat.

TABLE 3.—COMPOSITION OF A RATION CONTAINING 1,000 CALORIES

| | Ounces | Calories |
|---|---|---|
| Cooked beans | 7⅞ | 400 |
| Pork | 1 | 234 |
| Bread | 2½ | 180 |
| Butter | ½ | 103 |
| Milk | 5 | 100 |
| Coffee | 5 | ... |
| Total | | 1,017 |

The actual cost price of this meal of hot pork and beans, bread and butter and a cup of hot coffee and milk is 4¼ cents, excluding labor and rent, but including the coal used. The 2,500 calories required to maintain a man out of work on this diet would cost

TABLE 4.—THE COST OF 2,500 CALORIES IN FOODS ARRANGED IN ORDER OF THEIR INCREASING PRICE

Note that when three portions furnish 2,500 calories, one portion affords a good meal. When nine portions furnish 2,500 calories, then three different portions should form the meal.

| Name of Food | Nutritional Calories for Five Cents | Per Cent. in Bread and Butter | Cost of 2,500 Calories | No. of Orders to Make 2,500 Cal. |
|---|---|---|---|---|
| Napoleon | 453.6 | .... | $0.28 | 6 |
| Crullers | 444.0 | .... | .28 | 6 |
| Cabinet pudding and vanilla sauce | 396.5 | .... | .31 | 6 |
| Cocoanut pie | 372.9 | .... | .34 | 7 |
| *A—Roast beef sandwich with roll | 357.8 | .... | .35 | 7 |
| Bath buns | 357.5 | .... | .35 | 7 |
| Bread custard pudding | 355.4 | .... | .35 | 7 |
| Pineapple pie | 347.4 | .... | .36 | 7 |
| Corn muffins | 342.2 | .... | .37 | 7 |
| Apple pie | 337.2 | .... | .37 | 7 |
| New England pudding with vanilla sauce | 330.7 | .... | .38 | 8 |
| Chocolate spiced cakes | 324.0 | .... | .39 | 8 |
| Walnut layer cake with marshmallow icing | 323.2 | .... | .39 | 8 |
| Milk crackers | 317.1 | .... | .39 | 8 |
| Bread pudding with vanilla sauce | 298.4 | .... | .42 | 8 |
| Pumpkin pie | 296.1 | .... | .42 | 8 |
| A—Lamb croquettes and mashed potatoes | 291.4 | 29.5 | .43 | 3 |
| Coffee cake | 290.2 | .... | .43 | 9 |
| Rhubarb pie | 286.8 | .... | .44 | 9 |
| A—German meat cakes and French fried potatoes | 284.5 | 27.2 | .44 | 3 |
| Old fashioned molasses cake | 281.9 | .... | .44 | 9 |
| Lemon pie | 279.7 | .... | .45 | 9 |
| *A—Vienna roast with French fried potatoes | 278.3 | 29.7 | .45 | 3 |
| Butter cakes | 278.0 | .... | .45 | 9 |
| Minced ham sandwich | 277.3 | 63.8 | .45 | 9 |
| Pork and Boston beans | 276.6 | 27.1 | .45 | 3 |
| Cornmeal cakes with maple cane syrup | 275.2 | .... | .45 | 5 |
| A—Ham croquettes | 263.1 | 32.7 | .47 | 5 |
| Cold rice pudding | 263.1 | .... | .47 | 9 |
| Ham sandwich with roll | 261.8 | .... | .48 | 10 |
| Banana layer cake | 253.4 | .... | .49 | 10 |
| *A—Creamed chipped beef on toast | 249.2 | .... | .50 | 3 |
| Cocoa | 247.5 | .... | .50 | 10 |
| *A—Roast beef cutlet with tomato sauce | 246.5 | 38.4 | .51 | 3 |
| *A—German meat cakes with lyonnaise potatoes | 246.4 | .... | .51 | 3 |
| *A—Swiss cheese sandwich | 244.0 | 59.6 | .51 | 10 |
| * —Boston baked beans | 240.3 | 34.2 | .52 | 5 |
| A—Vienna roast, spaghetti and potatoes | 236.3 | 34.0 | .53 | 4 |
| Chocolate cornstarch with cream | 231.6 | .... | .54 | 11 |
| Wheat cakes with maple cane syrup | 231.1 | .... | .54 | 5 |
| Milk crackers and milk | 230.5 | .... | .54 | 5 |
| *A—American cheese sandwich | 230.2 | .... | .54 | 11 |
| * —New York baked beans | 229.7 | 35.5 | .54 | 5 |
| Hot corn bread | 228.6 | .... | .55 | 6 |
| *A—Country sausage | 227.9 | .... | .55 | 11 |
| Indian pudding with maple sauce | 227.2 | .... | .55 | 11 |
| *A—Minced tongue sandwich with tea biscuits | 225.6 | .... | .55 | 11 |
| Cream roll | 225.1 | .... | .55 | 11 |
| A—Beef cakes with brown gravy and macaroni | 224.8 | 35.1 | .56 | 4 |
| * —New York beans, on the side | 223.4 | .... | .56 | 11 |
| Graham crackers | 223.3 | .... | .56 | 11 |
| A—Broiled ham | 223.1 | .... | .56 | 3 |
| A—Roast beef hash, browned | 222.1 | 36.9 | .56 | 4 |
| Oyster pie | 220.4 | .... | .57 | 4 |
| *A—Minced chicken sandwich | 220.3 | 73.0 | .57 | 11 |
| Apple tapioca pudding | 217.2 | .... | .57 | 11 |
| Potato salad | 217.0 | 38.4 | .58 | 6 |
| Chocolate layer cake | 212.4 | .... | .59 | 12 |
| *A—Breaded veal cutlet and tomato sauce | 211.9 | 33.0 | .59 | 3 |
| Egg plant fried in butter | 208.7 | .... | .60 | 4 |
| Buckwheat cakes with maple cane syrup | 208.3 | .... | .60 | 6 |
| A—Roast beef croquettes with macaroni | 208.3 | 34.3 | .60 | 4 |
| A—Fried bacon with French fried potatoes | 208.1 | .... | .60 | 3 |
| A—Sardine sandwich | 207.4 | .... | .60 | 12 |
| *A—Minced ham sandwich with olives | 206.8 | .... | .60 | 12 |
| *A—Ham and New York beans | 206.6 | 40.2 | .61 | 4 |
| Vanilla cornstarch with cream | 206.5 | .... | .61 | 12 |
| *A—Roast beef cutlet and mashed potatoes | 205.7 | 38.3 | .61 | 4 |
| A—Lamb cutlet and mashed potatoes | 205.4 | 36.9 | .61 | 4 |
| Cocoanut cake | 204.6 | .... | .61 | 12 |
| Cream cheese walnut sandwich | 201.5 | .... | .62 | 12 |
| * —New York baked beans with tomato sauce | 201.5 | 34.8 | .62 | 6 |
| A—Ham and Boston beans | 201.3 | 44.6 | .62 | 4 |
| A—Liver and onions with French fried potatoes | 200.1 | .... | .62 | 3 |
| *A—Beef stew | 199.8 | 35.3 | .63 | 4 |
| *A—Pork and New York beans | 198.7 | 38.5 | .63 | 4 |
| *A—Ham sandwich | 198.3 | 73.2 | .63 | 13 |
| Rice croquette with bacon | 196.2 | 43.4 | .64 | 4 |
| Baked apple with cream | 196.0 | .... | .64 | 6 |

* Contains 15 per cent. or over of heat in protein. A contains the protein of meat, milk, eggs or cheese.

TABLE 4.—*Continued*

| Name of Food | Nutritional Calories for Five Cents | Per Cent. in Bread and Butter | Cost of 2,500 Calories | No. of Orders to Make 2,500 Cal. |
|---|---|---|---|---|
| A—Frankfurters and potato salad | 195.9 | 42.5 | $0.64 | 4 |
| * —Baked beans with macaroni | 195.8 | .... | .64 | 4 |
| Cup of coffee (containing cream and sugar) | 195.2 | .... | .64 | 13 |
| A—Mince pie | 194.1 | .... | .64 | 6 |
| *A—Lamb stew | 193.6 | 39.6 | .65 | 4 |
| *A—Broiled salt mackerel with mashed potatoes | 192.2 | 44.1 | .65 | 3 |
| Cherry pie | 191.5 | .... | .65 | 7 |
| Pound cake | 191.5 | .... | .65 | 7 |
| A—Chicken cutlet and mashed potatoes | 191.2 | 57.6 | .65 | 4 |
| *A—Shredded wheat and milk | 190.8 | .... | .66 | 7 |
| Cream tapioca pudding | 189.6 | .... | .66 | 13 |
| Soda crackers and milk | 188.6 | .... | .66 | 7 |
| Strawberry pie | 188.0 | .... | .66 | 7 |
| Chocolate eclair | 188.0 | .... | .67 | 13 |
| *A—Baked lamb pie (individual) | 187.7 | 46.6 | .67 | 4 |
| *A—Corned beef sandwich | 186.0 | 79.1 | .67 | 13 |
| A—Broiled bacon | 185.3 | 34.3 | .67 | 3 |
| Rice cakes with maple cane syrup | 185.6 | .... | .67 | 4 |
| A—Cold ham | 183.5 | 39.6 | .68 | 5 |
| A—Roast beef croquettes and spaghetti | 183.0 | .... | .68 | 5 |
| *A—Chipped beef and scrambled egg | 182.7 | 36.4 | .68 | 3 |
| A—Minced ham with scrambled eggs | 181.9 | 35.5 | .69 | 3 |
| Peach pie | 181.8 | .... | .69 | 7 |
| A—Baked macaroni and cheese | 181.6 | 40.5 | .69 | 7 |
| Huckleberry pie | 179.7 | .... | .70 | 7 |
| French toast with maple cane syrup | 179.2 | .... | .70 | 4 |
| *A—Corned beef and New York beans | 179.1 | .... | .70 | 5 |
| Blackberry pie | 177.9 | .... | .70 | 7 |
| *A—Veal pot pie with dumplings | 174.9 | 47.9 | .71 | 5 |
| *A—Creamed codfish on toast | 174.7 | 46.3 | .72 | 5 |
| A—Vienna roast with stewed tomatoes | 174.7 | 31.3 | .72 | 5 |
| *A—Tomato omelet | 174.4 | 55.3 | .72 | 4 |
| A—Small oyster fry | 174.2 | 36.6 | .72 | 4 |
| Hot rice with cream | 173.3 | .... | .72 | 5 |
| A—Plain oyster fry with bacon | 171.8 | 32.0 | .73 | 4 |
| *A—Hamburger steak | 170.5 | 29.9 | .73 | 4 |
| A—Corned beef hash, browned in pan | 170.3 | 46.1 | .73 | 5 |
| A—Corned beef hash, steamed | 169.3 | 55.8 | .74 | 5 |
| Cream | 168.7 | .... | .74 | 5 |
| *A—Chicken wings on toast | 168.2 | 38.2 | .74 | 4 |
| A—Country sausage and French fried potatoes | 167.2 | .... | .75 | 5 |
| *A—Corned beef and Boston beans | 166.7 | 48.6 | .75 | 5 |
| *A—Two fried eggs | 166.0 | 53.1 | .75 | 5 |
| *A—Ham omelet | 165.6 | 35.5 | .75 | 4 |
| *A—Plain omelet | 165.5 | 47.2 | .75 | 5 |
| *A—Fried liver and mashed potatoes | 164.8 | 51.7 | .76 | 5 |
| *A—Creamed chipped beef | 163.7 | 51.7 | .76 | 5 |
| A—Large oyster fry | 161.8 | 35.1 | .77 | 3 |
| Apple fritters with fruit sauce | 161.7 | .... | .77 | 8 |
| A—Fish cakes with tomato sauce | 161.2 | 54.4 | .78 | 5 |
| French fried potatoes, extra order | 160.4 | .... | .78 | 8 |
| Chocolate cornstarch with whipped cream | 159.6 | .... | .78 | 16 |
| Shredded wheat and cream | 159.5 | .... | .78 | 6 |
| A—Chicken croquette and French fried potatoes | 159.3 | .... | .78 | 5 |
| *A—Corned beef hash with poached egg | 158.9 | 35.5 | .79 | 4 |
| *A—Ham and eggs | 158.3 | 29.8 | .79 | 3 |
| *A—Ham and potato salad | 158.1 | 31.1 | .79 | 4 |
| *A—Baked shad and dressing | 157.7 | .... | .79 | 4 |
| *A—Hamburger steak with Spanish sauce | 157.4 | 33.7 | .79 | 4 |
| Charlotte russe | 156.5 | .... | .80 | 16 |
| *A—Creamed eggs on toast | 155.6 | 37.6 | .80 | 4 |
| A—Bacon and eggs | 155.3 | 29.8 | .81 | 3 |
| Strawberry fruit jelly with whipped cream | 154.9 | .... | .81 | 16 |
| *A—Buckwheat cakes with country sausage | 154.7 | .... | .81 | 4 |
| A—Oyster sandwich | 153.8 | 46.3 | .81 | 8 |
| *A—Chicken giblets on toast | 153.0 | 41.5 | .82 | 4 |
| Hot rice with butter | 152.6 | .... | .82 | 8 |
| Pimento olive cheese sandwich | 152.3 | 87.0 | .82 | 16 |
| *A—Liver and bacon with lyonnaise potatoes | 151.0 | 29.7 | .83 | 3 |
| *A—Corned beef hash, browned, with two poached eggs | 150.1 | 37.7 | .83 | 3 |
| Buttered toast | 149.7 | .... | .83 | 8 |
| *A—Liver and bacon | 149.4 | 36.4 | .84 | 3 |
| *A—Chicken hash | 146.9 | 46.3 | .85 | 6 |
| A—Two scrambled eggs | 146.3 | 52.6 | .85 | 6 |
| *A—Milk | 145.3 | .... | .86 | 9 |
| Apple sauce with whipped cream | 144.2 | .... | .87 | 17 |
| Hot rice with poached egg | 143.3 | 49.8 | .87 | 6 |
| *A—Corned beef with potato salad | 143.1 | 53.1 | .87 | 6 |
| Fish cakes with poached egg | 141.8 | 53.2 | .88 | 4 |
| *A—Cold roast beef | 140.1 | 63.4 | .89 | 6 |
| A—Hot rice with milk | 139.6 | .... | .90 | 9 |
| *A—Small steak | 138.0 | 28.3 | .91 | 3 |
| Baked apple | 136.8 | .... | .91 | 18 |
| Baked apple with ice cream | 136.0 | .... | .92 | 9 |
| A—Two lamb chops | 135.3 | .... | .92 | 3 |
| A—Chicken salad sandwich | 134.7 | .... | .93 | 9 |
| *A—Corned beef hash, steamed, with poached egg | 133.8 | 44.3 | .93 | 5 |
| * —Boston beans on side | 133.7 | .... | .94 | 19 |
| Tomato sandwich | 133.6 | 96.5 | .94 | 19 |
| A—Lamb chops, breaded, with mashed potatoes | 132.7 | 48.6 | .94 | 5 |

TABLE 4.—*Continued*

| Name of Food | Nutritional Calories for Five Cents | Per Cent. in Bread and Butter | Cost of 2,500 Calories | No. of Orders to Make 2,500 Cal. |
|---|---|---|---|---|
| *A—Maple flakes with milk | 132.6 | .... | $0.94 | 9 |
| *A—Corned beef | 132.4 | 45.8 | .94 | 6 |
| *A—Bulgarzoon | 132.1 | .... | .95 | 19 |
| A—Spanish omelet with French fried potatoes | 132.1 | 39.8 | .95 | 4 |
| Baked apple custard with whipped cream | 131.5 | .... | .95 | 10 |
| Boiled rice, side order | 130.8 | .... | .96 | 19 |
| *A—Fried egg sandwich | 129.6 | 64.7 | .96 | 10 |
| *A—Onion omelet | 129.1 | 27.0 | .97 | 5 |
| *A—Baked weak fish with dressing | 128.9 | 45.0 | .97 | 5 |
| *A—Sirloin steak | 128.1 | 20.1 | .98 | 2 |
| Fresh cooked oatmeal with cream | 127.7 | .... | .98 | 6 |
| *A—Fish cakes with macaroni | 126.9 | .... | .99 | 5 |
| Sliced bananas with cream | 126.2 | .... | .99 | 10 |
| * —Macaroni, side order | 125.8 | .... | .99 | 20 |
| *A—Roast sirloin of beef and mashed potatoes | 124.9 | 44.8 | 1.00 | 5 |
| A—Tomato omelet with potatoes | 121.9 | 42.9 | 1.03 | 4 |
| *A—Two boiled eggs | 121.6 | .... | 1.03 | 7 |
| *A—Fish cakes with spaghetti | 120.6 | 54.0 | 1.04 | 5 |
| *A—Macaroni omelet and tomato sauce | 119.1 | 38.5 | 1.05 | 4 |
| *A—Small steak with onions | 118.3 | 25.8 | 1.06 | 3 |
| *A—Fish cake sandwich | 117.8 | .... | 1.06 | 11 |
| *A—Egg salad | 116.0 | 54.9 | 1.08 | 5 |
| *A—Parsley omelet | 115.2 | 53.1 | 1.09 | 5 |
| Green split pea soup | 114.1 | 59.4 | 1.10 | 11 |
| Vanilla ice cream | 113.8 | .... | 1.10 | 11 |
| *A—Tenderloin steak with onions | 113.3 | 24.5 | 1.10 | 2 |
| *A—Cornflakes and milk | 111.1 | .... | 1.12 | 11 |
| Strawberry tart | 111.0 | .... | 1.13 | 11 |
| A—Tuna fish salad | 110.9 | 43.0 | 1.13 | 5 |
| *A—Sirloin steak with onions | 110.0 | 20.1 | 1.14 | 2 |
| Pineapple fruit jelly with whipped cream | 109.8 | .... | 1.14 | 23 |
| *A—Cup custard | 109.5 | .... | 1.14 | 11 |
| *A—Roast beef with potato salad | 107.4 | 43.9 | 1.16 | 5 |
| *A—Tenderloin steak | 106.3 | 19.8 | 1.18 | 2 |
| A—Milk toast | 105.6 | .... | 1.18 | 8 |
| Strawberry cornstarch with whipped cream | 102.2 | .... | 1.22 | 24 |
| Strawberry ice cream | 102.1 | .... | 1.22 | 12 |
| *A—Clam chowder | 100.6 | .... | 1.24 | 6 |
| * —Chicken soup | 100.4 | 49.5 | 1.24 | 8 |
| *A—Crab meat salad | 99.5 | 68.1 | 1.26 | 6 |
| Vegetable soup | 98.1 | 79.6 | 1.27 | 13 |
| Stewed rhubarb | 93.9 | .... | 1.33 | 27 |
| *A—Creamed chicken on toast | 92.9 | 37.5 | 1.35 | 7 |
| Strawberries with cream | 91.9 | .... | 1.36 | 9 |
| Strawberry short cake | 91.8 | .... | 1.36 | 9 |
| *A—Chicken omelet | 90.8 | 32.1 | 1.38 | 6 |
| *A—Deviled crab | 90.7 | 64.1 | 1.38 | 7 |
| Sliced bananas | 89.9 | .... | 1.39 | 28 |
| *A—Spaghetti and cheese | 88.0 | .... | 1.42 | 14 |
| *A—Fried ham | 86.8 | 49.6 | 1.44 | 6 |
| A—Minced chicken sandwich with lettuce | 86.3 | .... | 1.45 | 15 |
| * —Bean soup with croutons | 84.4 | .... | 1.48 | 15 |
| *A—Hot roast beef sandwich | 81.5 | .... | 1.53 | 10 |
| *A—Club sandwich | 81.4 | .... | 1.54 | 6 |
| *A—Sliced chicken sandwich | 78.1 | .... | 1.60 | 16 |
| *A—Poached eggs on toast | 66.6 | .... | 1.91 | 10 |
| Strawberries with ice cream | 65.0 | .... | 1.92 | 13 |
| * —Cream of wheat | 63.0 | .... | 1.98 | 20 |
| Blackberries and cream | 56.5 | .... | 2.21 | 22 |
| Stewed prunes | 52.5 | .... | 2.38 | 48 |
| * —Creamed asparagus on toast | 49.2 | .... | 2.54 | 13 |
| Watermelon | 39.4 | .... | 3.17 | 20 |
| * —Tomato soup with rice | 36.6 | .... | 3.42 | 34 |
| Sliced pineapple | 35.3 | .... | 3.54 | 71 |
| Grape fruit | 25.8 | .... | 4.85 | 32 |
| *A—Raw oysters | 18.6 | .... | 6.72 | 45 |
| Sliced tomatoes with lettuce | 16.6 | .... | 7.53 | 50 |
| * —Sliced tomatoes | 15.2 | .... | 8.20 | 82 |
| Tomatoes and lettuce with dressing | 13.5 | .... | 9.26 | 47 |
| Cantaloupe | 12.1 | .... | 10.33 | 69 |
| Champagne† | 8.6 | .... | 14.53 | 7 |

† Not purchased in the restaurant.

10.6 cents a day, or $38.70 a year. If such a thing as a "submerged tenth" really exists in this country it would cost $387,000,000 to feed 10,000,000 men for one year on this diet. The taxation in the United States, city, state and national, is said to be $4,000,000,000 annually. Ten per cent. of this sum would feed with pork and beans, bread and butter, coffee and milk, 10,000,000 men who are out of work. A similar menu just as cheap can be based on spaghetti flavored with tomato or cheese. It is not argued that a diet based on the cheaper foods is a panacea for all the woes of the world. It is not argued that such diets are the equivalent of caviar, champagne and canvas

back ducks, but it is argued that good wholesome simple food should be more available for mankind at a moderate price in hours of adversity and distress than is the case to-day. People should know how they can conserve their resources without detriment to their bodily welfare.

Passing to the consideration of the nutrition of the great mass of the people it seems probable that at the present time no more valuable data can be obtained than those which may be derived from a study of the various food portions solds by the Childs restaurant establishments which are situated in many cities throughout the country. The portions served are standardized, i. e., planned to be uniform in quantity and quality and the prices are the same in all the restaurants. Mr. F. C. Gephart has completed a notable analysis of 350 different portions as they are sold to guests at these establishments. The results of these analyses have been tabulated. Table 4 gives the cost of each food if that particular variety were alone made to furnish the 2,500 calories necessary for a man leading a sedentary life, to which is added the restaurant price of these 2,500 calories and the number of portions necessary to furnish them. Portions which contain 15 per cent. of protein calories or more have received a star. Portions which contain meat, fish, egg or milk proteins are preceded with the letter A, indicating the presence of animal proteins. The material in this table is arranged in the order of the increasing price of the food.

It appears that fourteen different orders yield enough food fuel for one day at a cost of less than 40 cents, or less than $145 per annum. Of these the roast beef sandwich made as a roll is conspicuous for cheapness.

Thirty-three different portions may yield the total energy requirement of 2,500 calories at a cost of less than 50 cents per day.

Suppose a restaurant be established with these thirty-three varieties only, and the consumer arranged his dietary so that he paid an average price of 40 cents for 2,500 calories, it would cost him $145 per annum for his food. If it be a fair division of one's income to expend one-fourth for rent, one-fourth for clothes, one-fourth for food and one-fourth for extras, then a single man may live at a Childs restaurant when his income is $50 a month, of which he spends $12.50 for food if he restricts himself to those thirty-three varieties. As a married man he would require $100 a month to maintain himself and his wife under similar circumstances.

Passing to food of a higher cost, it appears that thirty-two portions yield 2,500 calories at a cost of between 51 and 60 cents and here portions containing meat predominate.

There are forty-two varieties of foods which yield 2,500 calories between 61 and 70 cents and thirty-three which cost between 71 and 80 cents. At this latter level of cost orders for eggs such as fried eggs and creamed eggs on toast begin to appear.

Twenty varieties yield 2,500 calories at a cost of between 81 and 90 cents and twenty-four varieties cost between 91 cents and $1.00. The sirloin steak appears at the level of 91 cents.

This gives a choice of 184 dishes which yield 2,500 calories at a maximum daily cost of $1.00.

There are fifty-five varieties of food which cost more than $1.00 per 2,500 calories. The cost rises rapidly. Seven orders of two boiled eggs (with but-

TABLE 5.—SELECTED MENUS

| | Cost, Cents | Calories |
|---|---|---|
| **MONDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| Hot corn muffins | 5 | 453 |
| Lunch: | | |
| *A—Roast beef sandwich and roll | 5 | 357 |
| Crullers | 5 | 444 |
| Dinner: | | |
| *A—Vienna roast, fried potatoes, bread and butter | 15 | 834 |
| Cocoanut pie | 5 | 372 |
| Total | 40 | 2,655 |
| **TUESDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| *A—Chipped beef and scrambled eggs | 90 | 728 |
| Lunch: | | |
| *A—Roast beef cutlet, tomato sauce, fried potatoes, bread and butter | 15 | 738 |
| Dinner: | | |
| A—Lamb croquettes and mashed potatoes, bread and butter | 15 | 874 |
| Apple pie | 5 | 177 |
| Total | 60 | 2,712 |
| **WEDNESDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| Boston pork and beans, bread and butter | 10 | 480 |
| Butter cakes | 5 | 278 |
| Lunch: | | |
| *A—German meat cakes with lyonnaise potatoes, bread and butter | 15 | 738 |
| Dinner: | | |
| A—Roast beef hash, browned, bread and butter | 15 | 666 |
| Pumpkin pie | 5 | 296 |
| Total | 55 | 2,453 |
| **THURSDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| Bath buns | 5 | 357 |
| *A—Country sausage | 5 | 257 |
| Lunch: | | |
| A—Vienna roast, spaghetti, potatoes, bread and butter | 15 | 708 |
| A—Swiss cheese sandwich | 5 | 244 |
| Dinner: | | |
| A—Roast beef croquettes, macaroni, mashed potatoes and bread and butter | 15 | 624 |
| Cold rice pudding | 5 | 263 |
| Total | 55 | 2,648 |
| **FRIDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| A—Broiled ham with bread and potatoes | 20 | 892 |
| Lunch: | | |
| A—Beef cakes, brown gravy and macaroni | 15 | 774 |
| Dinner: | | |
| A—Ham croquettes with mashed potatoes | 10 | 526 |
| Napoleon | 5 | 453 |
| Total | 55 | 2,840 |
| **SATURDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| Corn meal cakes and maple syrup | 10 | 550 |
| Lunch: | | |
| A—Roast beef hash (browned), bread and butter | 15 | 666 |
| Cup of cocoa | 5 | 247 |
| Dinner: | | |
| *A—Roast beef cutlet and mashed potatoes, bread and butter | 15 | 617 |
| Bread custard pudding | 5 | 355 |
| Total | 55 | 2,630 |
| **SUNDAY** | | |
| Breakfast: | | |
| Coffee (with milk and sugar) | 5 | 195 |
| *A—Creamed chipped beef on toast, rolls and butter | 15 | 747 |
| Dinner: | | |
| *A—Breaded veal cutlet, tomato sauce, potatoes, bread and butter | 20 | 847 |
| Mince pie | 10 | 388 |
| Supper: | | |
| Oyster pie | 15 | 660 |
| Cabinet pudding and vanilla sauce | 5 | 389 |
| Total | 70 | 3,236 |

TABLE 5.—*Continued*

| SUMMARY | Cost in Cents | Calories |
|---|---|---|
| Monday | 40 | 2,655 |
| Tuesday | 60 | 2,712 |
| Wednesday | 55 | 2,453 |
| Thursday | 55 | 2,648 |
| Friday | 55 | 2,840 |
| Saturday | 55 | 2,630 |
| Sunday | 70 | 3,236 |
| Per week | $ 3.90 | 19,174 |
| Per diem | 0.56 | 2,739 |
| Per month | 16.80 | |

Individual income appropriate to this expenditure is $67.20 per month.

tered toast) costing $1.03 for 2,500 calories stand out in their extravagance, but this is outdone by nine orders of two poached eggs on toast costing $1.91 for the day's requirement. The portion of spaghetti with cheese is certainly overpriced, and were the service to an Italian clientele would not be so costly.

The greatest wonder appears in the cost of the tomato portions. Tomatoes with lettuce and dressing cost over $9.00 for 2,500 calories, nearly as much as cantaloupe at $10.00, while champagne (bought outside the restaurant at $4.00 a quart) costs $14.00 for 2,500 calories.

The mystery of tomatoes is baffling. A can of tomatoes is little else than flavored water. The popularity of the tomato probably depends on its flavor and its color. A painter wishing to sell a landscape puts a figure with a red cloak in the center. It is an ancient device. In like manner, a restaurant puts a few lettuce leaves on a plate with a red tomato in the middle, covers it with a little dressing and gets a large price. It is the work of an artist for a connoisseur.

To indicate the practical value to which this work may be put, the following selected menus have been arranged. They give the cost and caloric content of inexpensive dishes which may be ordered at the restaurant and which provide for three meals a day during a week for a man of average weight. Only the morning cup of coffee occurs more than once.

TABLE 6.—COST TABLE

| Ham and Eggs, 25 Cents | Cents |
|---|---|
| 2 Eggs | 6.66 |
| 3½ oz. Ham | 4.40 |
| 3 Slices bread | 0.45 |
| 10 gm. Butter | 0.89 |
| 2½ oz. Potatoes | 0.04 |
| 800 calories | 12.44 |

| Bacon and Eggs, 25 Cents | Cents |
|---|---|
| 2 Eggs | 6.66 |
| 1 oz. Bacon | 3.72 |
| 3 Slices bread | 0.45 |
| 10 gm. Butter | 0.89 |
| 2½ oz. Potatoes | 0.04 |
| 800 calories | 11.76 |

| Plain Omelet, 15 Cents | Cents |
|---|---|
| 2 Eggs | 6.66 |
| 3 Slices bread | 0.45 |
| 10 gm. Butter | 0.89 |
| 500 calories | 8.00 |

| Tenderloin Steak, 55 Cents | Cents |
|---|---|
| 9½ oz. Steak | 17.30 |
| 3 Slices bread | 0.45 |
| 10 gm. Butter | 0.89 |
| 2½ oz. Potatoes | 0.04 |
| 1,300 calories | 18.68 |

| Ham Sandwich, 5 Cents | Cents |
|---|---|
| ½ oz. Ham | 0.70 |
| 2 Slices bread | 0.30 |
| 10 gm. Butter | 0.89 |
| 200 calories | 1.89 |

At Bellevue Hospital, New York, in 1912, the cost of food from the market, that is, of uncooked food, was 25 cents daily for 3,200 calories for each person in the establishment; at the Muncipal Lodging House during 1911 the cost was 13 cents daily for 2,700 calories per person.

When one considers that Childs restaurant pays for service and for expensive ground floor rental in the busiest parts of New York City, surely food at the cost outlined above is not expensive. But this menu is laboratory made, calculated from the scientific standpoint and from the standpoint of food economics. The restaurant in question could easily give this information on its menu card. It would have immense educational influence were it to do so.

In a few selected portions Mr. Gephart has estimated the retail market value of materials entering into the portions sold and these are revealed in Table 6.

It is evident that the actual cost of these standard portions is about half to one-third their cost in the restaurant. The housewife who knows how to buy the essential ingredients, and especially how to cook them, is an economic factor of prime importance in the home. Of such stuff is the science of food economics.

Mr. Gephart's work is the first extended investigation of its kind. It would be wise if the public could be better informed regarding the caloric value of foods which it purchases. It would be of vast significance if the barrel of flour, the can of lard, the pot of beans or the package of breakfast food could be labeled with the caloric content of the particular unit of sale.

The question would not then be asked, would Professor X eat his own diet? But the individual could then ask himself, am I sufficiently well-to-do to be careless of what I spend for food? And, can I spend less with equal profit and as great satisfaction?

## SCOPOLAMIN-MORPHIN TREATMENT IN LABOR

### A CRITICAL ANALYSIS OF SIXTY CASES

JOSEPH LOUIS BAER, S.M., M.D.
Associate Attending Obstetrician, Michael Reese Hospital
CHICAGO

A series of cases under scopolamin-morphin treatment was begun January 1, this year, in the Michael Reese Maternity, on the obstetric service of Dr. Lester E. Frankenthal, and continued on the service of Dr. Frank Cary. The series terminated February 5.

All private cases, all cases that threatened to become pathologic, and all cases that came in too soon before delivery to permit of the proper administration of the drugs, were kept out of the series. The total number analyzed was sixty.

Of the four delivery rooms in the Michael Reese Maternity, each constructed with cork-lined, soundproof walls and sound-proof doors, the largest was chosen for the "twilight sleep" cases. Two nurses, both graduates with extensive obstetric experience, were especially engaged for day and night duty during the entire period of the series, and they remained constantly in the delivery room. The patients were furthermore under the continual observation of either the senior or junior intern on obstetrics, and of the day and night head nurse in charge of the maternity. All results were tabulated and the observations were constantly checked by Drs. Frankenthal, Cary and myself.

Patients in labor were sent to the third floor admitting room where they received a tub bath (sponge bath if membranes had ruptured), shaving of the genitals, and an enema, if not too far advanced in

labor; when, if suitable for the series, they were taken to the delivery room, where treatment was begun with the following indications; in multiparas, when the pains recurred every ten minutes, and in primiparas when the pains recurred every five minutes.

The drug used in the earlier cases was a tablet form of scopolamin put out by Sharp and Dohme and made by Merck; later a powder form of scopolamin by Merck and ampules of scopolamin from Hoffman-LaRoche, preserved with mannite, according to the formula of Straub of Freiburg, were employed in alternate cases.

The total dosages varied from one-eighth to one-quarter grain morphin and from two doses of 1/200 to nine doses of 1/150 and eleven doses of 1/200 grain scopolamin, hypodermically. Subdued light, smoked glasses and avoidance of unnecessary and loud talking were strictly enforced. Observations on all points brought out in the literature were taken and recorded at half-hour intervals, and oftener when necessary.

The accompanying table represents a summary of the sixty cases in two groups, primiparas and multiparas. A few of the items were analyzed in only the last twenty-one cases, and are marked "2d S."

At the close in each case a brief impression of that case was written, and these remarks are here presented verbatim in groups arranged according to the degree of success or failure.

## RESULTS OF TREATMENT

### NO SUCCESS, TWENTY-SIX CASES

CASE 10.—Patient's memory was clear at all times. Patient was somewhat indifferent to the pains, but said that the pains were severe.

CASE 13.—Slight vertigo—memory clear at all times.

CASE 29.—Patient's memory clear throughout, slight flush and marked thirst being the only noticeable symptoms.

CASE 32.—At no time during labor had patient the slightest cloudiness of memory, sleeping between pains.

CASE 53.—Patient was delirious for several hours, doing foolish stunts and was very restless.

CASE 55.—Patient was very delirious, throwing herself about in a wild manner and later required restraint.

CASE 56.—Very restless—the drug increased her restlessness.

CASE 58.—Very restless, and during the second stage patient was absolutely unmanageable—could not be aroused and had to have restraining sheet.

CASE 61.—Treatment stopped after 5/150 grain scopolamin and 2/8 grain morphin because labor pains ceased. Patient also vomited and became restless; fetal heart tones dropped to 96 and forceps were used.

CASE 63.—Not much effect of the drug could be seen.

CASE 66.—Patient had a mitral insufficiency and myocarditis, a supposedly ideal case for the use of the treatment. After three doses subcrepitant râles appeared in the upper left lung, the pulse became fast and irregular and the fetal head stood in deep transverse arrest. Forceps and immediate extraction were followed by a pulmonary edema, from which the patient finally recovered. The baby was born in asphyxia pallida and was resuscitated with difficulty.

CASE 68.—No effect of drug noticed.

CASE 3.—Patient's memory at all times was clear and no effect of the drug noticeable.

CASE 9.—Patient's memory at all times was clear and very little effect of drug could be noticed. Patient had difficulty in getting the head past the outlet. Pains were strong, but no progress. "Kristeller" resulted in normal delivery.

CASE 11.—Delivery rapid following a somewhat quiet period. Patient quite indifferent, apparently having little pain, but somewhat cyanotic.

CASE 12.—Patient in the beginning was quiet; after the third dose became somewhat noisy and hysterical; memory was clear throughout labor.

CASE 14.—Child revived with difficulty. Later condition good. Treatment did not give desired effect of drugs.

CASE 19.—With heart tones at 108 from 124 after two doses, deemed it inadvisable to continue the treatment. Patient's mind was clear at all times and no effects of the treatment were noticeable.

CASE 25.—Patient had no disturbance of memory.

CASE 33.—Patient stopped for about four hours; after the fourth injection of scopolamin no effects of the drug were obtained.

CASE 37.—Patient's memory was clear at all times.

CASE 59.—Patient's memory clear throughout labor. After delivery became restless, then delirious, got out of bed and ran to window, getting onto the sill, was dragged off by the nurse, overpowered her, ran to the rear stairway, where three nurses finally succeeded in subduing her and getting her into the quiet room, where she was shackled and kept so four days, when she finally became entirely rational again.

CASE 62.—Patient's memory clear throughout. Case terminated by rupture of uterus. Patient, nonipara, had three doses of scopolamin 1/200 grain, and 2/8 grain morphin. After the last dose at 1:45 a. m., pains became less frequent and stopped at 4:30 a. m. At this time the fetal heart tones could no longer be heard, and the patient gradually became semiconscious. At 6:30 she was pale, and sweat appeared on the brow. The dilated cervix was found collapsed and the presenting head had receded. Diagnosis, rupture of the uterus, seen by Drs. Frankenthal, Cary and myself, abdominal section done, fetus and placenta found free in the abdominal cavity, a jagged transverse rupture in the lower uterine segment of the uterus, running straight across the whole width anteriorly just at the level of the fundus of the bladder and a huge retroperitoneal hematoma up to the kidney. Hysterectomy was done—patient died on the second day.

CASE 65.—No effect of drug noticed.

CASE 67.—No effect of drug noticed.

CASE 70.—No effect of drug noticed.

### LITTLE SUCCESS, SEVEN CASES

CASE 6.—Patient's memory seemed clear at all times, bearing down pains were very few.

CASE 16.—Toward the end, patient appeared for a few seconds rather confused. Memory always clear, slightly irrational after returning to the ward, restless and required restraint.

CASE 18.—Patient at no time before delivery had cloudy memory. Pain lessened toward end.

CASE 20.—Labor seemed very easy, patient's memory was clear at all times.

CASE 49.—With the exception of about two hours after the fourth dose, patient had clear memory throughout.

CASE 69.—Patient slightly drowsy at birth, but knew of birth.

CASE 7.—Patient's memory was slightly cloudy at time of birth.

### PARTIAL SUCCESS, EIGHT CASES

CASE 15.—Drugs apparently had some effect on memory though not throughout. Duration of effect rather short—no marked improvement on giving last dose; patient very noisy, excited, and at times toward the end became irrational and difficult to control until about the last hour, when she quieted down considerably.

CASE 24.—Patient had six doses 1/150 grain of scopolamin, but had few symptoms showing effect; although patient responded to memory tests before birth she had no recollection of the birth of child. She says she had chloroform.

CASE 28.—Amnesia present to slight degree. Patient very noisy during the last hour, and had to have restraining sheet in ward.

CASE 34.—Patient appeared very drowsy. Difficult to concentrate thoughts. At intervals she seemed to have cloudy memory for events.

SUMMARY OF CASES

| | Totals | Primiparas | Multiparas |
|---|---|---|---|
| Cases | 60 | 33 | 27 |
| Drugs: | | | |
| Scopolamin, total amount (range) | | 2/200–9/150–11/200 | 8/150–7/200 |
| Morphin, total amount (range) | | 1/8–2/8 | 1/8–2/8 |
| Time from first to last hypodermic (range) | | 1: 15–19: 45; Av., 8: 15 | 1: 15–12: 15; Av., 5: 35 |
| Duration (Compared with an untreated series of one year ago): | | | |
| First stage | | 17: 10 Untreated (10: 20) | 14: 13 Untreated (7: 55) |
| Second stage | | 2: 10 series ( 2: 00) | 1: 59 series (1: 33) |
| Total labor | | 19: 42 (12: 51) | 15: 11 (7: 53) |
| Subjective symptoms: | | | |
| Memory, clear | 26 | 12 | 14 |
| Memory, cloudy | 39 | 24 | 15 |
| Deep T. S. | 1 | 1 | 0 |
| Very deep T. S. | 0 | 0 | 0 |
| Thirst | 32 | 17 | 15 |
| Euphoria, 2d S. | | Good, 6; fair, 1; poor, 4 | Good, 6; fair, 1; poor, 2 |
| Headache | 27 | 15 | 12 |
| Vertigo | 31 | 22 | 9 |
| Objective symptoms: | | | |
| Sleep | 43 | 24 (slight 8) | 19 (slight 3) |
| Incoordinate movements | 13 | 10 (slight 1) | 3 (slight 1) |
| Reflexes | | Not abolished | Not abolished |
| Flushing of face | 45 | 24 (marked 2) | 21 |
| Dry skin and mucous membranes, 2d S. | 18 | 10 | 8 |
| Apparent effect on pain: | | | |
| Absent | 1 | 1 | 0 |
| Less | 39 | 20 | 19 |
| Average | 19 | 10 | 9 |
| Increased | 1 | 1 | 0 |
| Consciousness: | | | |
| Present | 45 | 23 | 22 |
| Partial | 10 | 6 | 4 |
| Absent | 5 | 4 | 1 |
| Excitation: | | | |
| Absent | 39 | 17 | 22 |
| Present | 16 | 12 | 4 |
| Marked | 2 | 2 | 0 |
| Delirium | 9 | 7 | 2 |
| Abdominal pressing: | | | |
| Good | 24 | 10 | 14 |
| Medium | 18 | 9 | 9 |
| Absent | 10 | 7 | 3 |
| Vomiting, 2d S. | 4 | 1 | 3 |
| Birth: | | | |
| Spontaneous | 57 | 31 | 26 |
| Operative, etc. | 4 | 2 (forceps) | 2 Kristeller abdom. section |
| Mental state at birth: | | | |
| Clear | 28 | 15 | 13 |
| Cloudy | 26 | 14 | 12 |
| Deep T. S. | 5 | 4 | 1 |
| Expression of pain: | | | |
| None | 4 | 2 | 2 |
| Slight | 5 | 3 | 2 |
| Average | 37 | 20 | 17 |
| Marked | 8 | 5 | 3 |
| Additional anesthesia | 3 | 2 (ether) | 1 (ether) |
| Perineal tears | 12 | 7 | 5 |
| Baby: | | | |
| Respiration spontaneous | 47 | 25 | 22 |
| Respiration artificial | 13 | 8 | 5 |
| Rhythm and character, 2d S. | 3 | 3 feeble | 0 |
| Asphyxia | 6 | 4 | 2 |
| Oligopnea | 4 | 4 | 0 |
| Pulse 1 hr., P P, 2d S. | | Good, 8; fair, 2; poor, 1 | Good, 9 |
| Pupils, 2d S. | | Dilated, 4; slightly, 6 | Dilated, 2; slight, 3 |
| Stillbirth | 1 | 0 | 1 (rupture uterus) |
| Late lasting symptoms: | | | |
| Mydriasis, 2d S. | 8 | 7 | 1 |
| Cloudiness, 2d S. | 9 | 6 | 3 |
| Delirium, 2d S. | 2 | 1 | 1 marked |
| Puerperium: | | | |
| Breast engorgement, 2d S. | 3 | 3 | 0 |
| After-pains, 2d S. | 8 | 6 | 2 |
| Involution | | Normal | Normal |
| Placenta: | | | |
| Spontaneous delivery | 2 | 1 | 1 |
| Credé | 57 | 31 | 26 |
| Manual removal | 1 | 0 | 1 (laparotomy) |
| Blood pressure-range: | | | |
| Antepartum | | 115–150 | 115–150 |
| Postpartum | | 110–145 | 110–145 |
| Strength of contractions, 1st stage: | | | |
| Average | 51 | 28 | 23 |
| Decreased | 8 | 5 | 3 |
| Strength of contractions, 2d stage: | | | |
| Average | 29 | 13 | 16 |
| Decreased | 28 | 18 | 10 |
| Increased | 3 | 2 | 1 |
| Postpartum hemorrhage | 7 | 5 | 2 |
| Number of bimanual examinations (total, 77): | | | |
| One examination | 52-52 | 26 | 26 |
| Two examinations | 5-10 | 5 | 0 |
| Three examinations | 5-15 | 2 | 3 |
| Positions: | | | |
| L O A | 47 | 25 | 22 |
| R O A | 10 | 7 | 3 |
| R O P | 1 | 1 | 0 |
| Dp. tr. arrest | 1 | 1 (No. 66 forceps) | 0 |
| Success of treatment: | | | |
| None | 26 | 12 | 14 |
| Little | 7 | 6 | 1 |
| Partial | 8 | 4 | 4 |
| Fair | 5 | 4 | 1 |
| Good | 8 | 5 | 3 |
| Complete | 6 | 2 | 4 |

CASE 17.—Toward the end patient seemed slightly confused. Memory occasionally cloudy, but was quite clear after delivery.

CASE 21.—Patient drowsy throughout from a half hour after the first injection. Attempted to sleep between pains. Pain apparently uninfluenced; memory clear throughout.

CASE 48.—Patient was under effect of the drugs only at the very end. Treatment lasted 6½ hours.

CASE 51.—Patient's memory was only slightly cloudy.

FAIR SUCCESS, FIVE CASES

CASE 8.—Patient's memory was clear throughout, but she appeared indifferent to what was going on.

CASE 43.—Patient was under influence of the drug as concerns amnesia for about one hour. Treatment lasted five hours and twenty-five minutes.

CASE 44.—Patient's memory was cloudy—excitation in the last half hour very marked, throwing herself about wildly. In the ward she had to be tied in bed.

CASE 45.—Patient was wildly delirious at time of pain, sleeping between pains, but throwing herself about for two hours before delivery in a wild manner.

CASE 57.—Postpartum hemorrhage half hour after patient returned to bed. Patient did not know when the baby was born. Abdominal muscles not used after the fifth dose of scopolamin.

GOOD SUCCESS, EIGHT CASES

CASE 5.—Patient seemed to come partially out of the effect of the treatment shortly before delivery.

CASE 22.—Patient after the first three doses showed considerable amnesia; partially recovered; after last two doses she showed amnesia again and doesn't remember when the baby was born.

CASE 26.—After the third dose did not use her abdominal muscles; hence head remained at the vulva longer than need have been.

CASE 35.—Memory tests were interfered with on account of the delirium present. Patient seemed to remember on the following morning much better than had been expected.

CASE 47.—Patient was very quiet; very difficult to arouse; memory was cloudy; abdominal muscles not acting.

CASE 40.—So far as could be ascertained, this case was a success; patient quite an ignorant person and information difficult to obtain; memory quite cloudy; pain not noticeably diminished.

CASE 41.—Patient quite noisy immediately prior to delivery, but after child was born she slept, during which motions of the extremities were spasmodic and involuntary. Drug seemed to act promptly, and amnesia was present after the second dose.

Case 54.—Amnesia attained at the time of delivery—temporary—semi-delirious toward the end.

COMPLETELY SUCCESSFUL, SIX CASES

CASE 23.—Patient had absolute loss of memory, but was very delirious, throwing herself about in a wild manner. Repair work was almost impossible on account of her wild actions, and restraint was necessary in bed. Child started breathing with little stimulation; ten minutes later stopped and artificial respiration had to be resorted to.

CASE 60.—Patient did not know when baby was born. Conduct during labor excellent.

CASE 42.—Patient's memory was only slightly cloudy prior to delivery, but amnesia was more marked after the birth of the child. Delivery was rapid.

CASE 46.—Patient was very quiet and slept all the time from one hour before delivery until several hours thereafter. Pains during second stage were good, regular and strong, but abdominal muscles were not used.

CASE 50.—Patient's memory was cloudy. Gave no expression of pain at time of birth and slept most of the time.

CASE 52.—Patient's amnesia was complete. Slept almost all the time, arousing only slightly at the return of each pain.

Two primiparas, cases 53 and 56, classified as unsuccessful, received the maximum total doses, 9/150 grain scopolamin, and a primipara, case 49, classified as slightly successful, received 11/200, whereas case 60, primipara, and cases 42, 46 and 50, multiparas, classified as completely successful, each received a total of only 3/150 grain scopolamin. These striking variations in dosage, effective conversely to the total amounts used, show clearly how utterly uncertain the outcome must be in any given case. But the women whose faith in their local physicians of worth has been shaken by the trumpet blasts of the optimists—what do they know about these petty details?

The average duration of the so-called first stage (17: 10, primiparas, and 14: 15, multiparas) exceeded that of a series of one year ago of the same number of cases taken for comparison (10: 20, primiparas and 7: 55, multiparas) by about seven hours, while the second stages in the two series (2: 10, primiparas, and 1: 59, multiparas, this series, and 2: 00, primiparas, and 1: 33, multiparas, untreated series) were about equal. However, it must be remembered that the total number of bimanual examinations made on the entire sixty cases was only seventy-seven, and that every patient admitted to the Michael Reese Maternity is examined once bimanually as soon as prepared after admission, and thereafter not again unless there is the strictest indication; hence the onset of the second stage had to be determined in most cases by other means, such as rupture of membranes, bearing down pains, etc., and as a result the seven hour retardation should be considered as applying to the combined first and second stages. To overcome this generally conceded prolongation of labor (though several writers have claimed the opposite result) pituitary extract has been freely and frequently employed elsewhere. Such juggling with the natural powers, like the combined use of the brake and the whip, has seemed to us an attempt to make a right out of two wrongs. The use of pituitary extract in the Michael Reese Maternity service is limited sharply to the terminal portion of the second stage, when its maximum benefits are seen without secondary disadvantages.

Memory tests were carried out conscientiously but without unnecessarily disturbing those patients that seemed somnolent. Twenty-six remained clear throughout labor, thirty-nine were cloudy, yet the twenty-six had a greater total of scopolamin than the thirty-nine.

Thirty-two women complained of a thirst so intense as to be literally unquenchable. Their parched mouths and incessant requests for water were not the least distressing feature of the treatment.

Headache and vertigo were present in twenty-seven and thirty-one cases, respectively, and the former was a source of much distress and even intense suffering, persisting for several days in some cases. Yet these same women who were rendered so wretched, in many instances for hours and days after delivery, would have gone through a normal confinement of from eight to eleven hours' average duration, and would have been comfortable and happy thereafter, if they had not had the so-called blessings of "twilight sleep."

Forty-three patients slept part of the time, but could always be easily aroused, seeming to respond to external stimuli and to feel the contractions.

Pain was felt by many of these women regardless of the number of doses of scopolamin. It was diminished in thirty-nine, absent in one, average in nineteen

and increased in one. That this applied equally to the cases at Freiburg, is evidenced by the various series in which additional anesthetics were used at the end, such as ether, ethyl chlorid, etc. If this be so, then why discard the old and tried combination of morphin hypodermically for pain and chloral by rectum, with completely effaced and partially dilated cervix, as used by the obstetricians of the Michael Reese Maternity for more than a quarter of a century with safety? The typical analgesia and amnesia of the more favorable reports in the literature were obviously not attained in a large number of cases in which we had every reason to expect results if the claims made by the proponents of this procedure had been substantiated.

Restlessness was present in eighteen cases and delirium in nine, in seven of which restraint and shackling were necessary. These "obstetrical jags," as Dr. Cary so aptly put it, represented the most annoying and unpleasant phase of the whole investigation, appeared in every kind of case with few or many doses, and necessitated unremitting watchfulness on the part of the nursing staff and interns, in spite of which such incidents as those in Case 59 occurred.

The serious risk of self-infection during labor engendered by the uncontrolled motions of these women was a source of constant anxiety. They sat cross-legged and the heel would enter the vulva. In their vague efforts to reach the region of pain, they repeatedly attempted to explore their genitalia. It was next to impossible to keep the genitalia free from feces, and the fact that we had no infections can be ascribed chiefly to the careful initial preparation all patients receive in the admitting room of the maternity, plus the untiring alertness of the nursing force to keep these women from harming themselves. In this connection, comment is in order on the practice of one clinic, in which patients undergoing the treatment are virtually under strait-jacket restraint. Is a treatment necessitating such measures deserving of recognition, much less approbation?

Three days prior to the occurrence of Case 62, rupture of the uterus, Dr. Frankenthal spoke to me of the danger that this treatment could obscure such important symptoms as the pain in premature separation of the placenta, *cessation of pains* in rupture of the uterus, even the presence of an eclampsia suppressed by medication similar to the Stroganoff treatment; and though thanks to the day and night staff, this case was detected, who knows what further disasters might happen in future series or isolated cases, under the combined blanket of the drug, the semidarkness of the room and the patient too restless for proper examination?

Birth in all cases but four was spontaneous. Case 9, sextipara, Kristeller, after the head had been on the perineum one and one-half hours; Case 61, primipara, heart tones dropped to 96, after 27:10 hours of labor and low forceps were applied; Case 66, primipara, broken cardiac compensation, head in deep transverse arrest after 22:25 hours, 4:25 of which were in the hospital, terminated by forceps; and Case 62, abdominal section for rupture of the uterus.

Amnesia at birth was entirely absent in twenty-eight, present in twenty-six, and marked in five, while analgesia was present in four, slight in five, pain was average in thirty-seven, and marked in eight at birth. Ether was used in three cases, all operative.

Perineal tears occurred in twelve cases, or 20 per cent. of the series, seven in primiparas, and five in multiparas, ranging from slight first degree, to deep second degree, all of which were repaired immediately, this being the routine in the Michael Reese Maternity for all tears however slight. In the untreated series of sixty cases of a year ago there were seventeen perineal tears, or 28 per cent.; but in this connection it is debatable whether a very slow passage of the head over the perineum and through the vulva, leaving the mucocutaneous surfaces intact, to be sure, but causing a separation of the perineal musculature subcutaneously with subsequent rectocele and possible prolapse, is more desirable than an occasional episiotomy with immediate and accurate repair. The understanding women of this generation seem much more concerned lest a tear be left unsutured or improperly sutured, than by the occurrence of the tear itself.

Respirations in the baby were spontaneous in forty-six cases, and required artificial aid in thirteen cases. Methods used ranged, after laryngeal aspiration, from spanking to hot and cold tubbing, artificial respirations, Schultze swinging, and direct tracheal insufflation by catheter. Four were oligopneic and six were asphyctic, requiring constant watching and in two cases repeated resuscitations.

The one stillbirth occurred in Case 62, rupture of the uterus, with escape of the fetus into the abdominal cavity and prompt death.

Of the "late lasting symptoms," the patients complained most of blurred vision; eight were pronounced, lasting over twenty-four hours; nine patients had cloudy memory lasting over six hours postpartum, and two had marked delirium, persisting two and four days postpartum. Who can read such statistics, knowing the care with which this work was done and the safeguards that were thrown around the cases, and not feel out of patience with those who seemingly are trafficking in the natural fears of pregnant women?

After-pains were noteworthy in eight cases, six in primiparas, a larger proportion than is usual; involution, breast engorgement and lactation were not influenced. Our mothers nurse their babies, the babies do well, and are taken off the breast only on the rare occasions when a threatened breast infection requires radical action to avoid pus formation.

"The exhaustion of labor" has always been conspicuous by its absence in the wards of the Michael Reese Maternity, excepting in the occasional pathologic primiparas, and even these are usually alert on the second day. We find it hard to understand this phrase, graphic though it is, for there is seldom a day when on making rounds it is not necessary to insist that some recently delivered woman get off her elbow, stop entertaining her neighbors, and lie down. The women are permitted to turn frequently, and after four days are encouraged to lie face downward the greater part of the time and so favor anteflexion in involution. All patients sit up in bed on the eighth day, get out of bed on the ninth and go home on the eleventh day (many on the tenth at their own request because they feel so well).

Spontaneous delivery of the placenta occurred only twice, fifty-seven cases requiring the Credé expression, which is not attempted until thirty minutes postpartum even if a placental pole shows at the outlet. In the untreated series of sixty cases there were five spon-

taneous expulsions. The single manual removal occurred in the case of ruptured uterus.

Blood pressures taken on admission and immediately postpartum showed an average drop of 5 mm.

There were seven postpartum hemorrhages, none of which required packing, but were variously controlled by holding the fundus (not massaging), vulvar compression, ergot and pituitary extract hypodermically, and temporary compression of the abdominal aorta. This compares unfavorably with the untreated series of sixty cases in which only one postpartum hemorrhage occurred, but is surely explained by the enfeebled contractions, the lengthened labor and the restlessness of the patients.

That frequent bimanual examinations are not necessary, even in such a series as this in which the patient is so unreliable a guide, is proved by the small total of seventy-seven in sixty cases, in spite of which no obstetric indications were overlooked.

From the foregoing results it seems reasonable to conclude that there are such dangers connected with the administration of the drugs, and that there is such a striking uncertainty of action in any given case, that the routine adoption of the treatment is not to be considered; moreover, it has been found impossible to "select" cases on any intelligent basis.

The lay press and magazines in their anxiety to outdo one another have published articles filled with the most extravagant phrases, but it is a bit out of the ordinary to read of a medical enthusiast announcing that by this treatment *the horrors of the delivery room are avoided*. The women must be few and far between who look back on the room in which they gave birth as a "chamber of horrors."

SUMMARY

The prolongation of labor, the increase in the number of fetal asphyxias, the excessive thirst and intense headaches that are so distressing, the difficult control of patients and avoidance of infection by soiling of the genitals, the more frequent postpartum hemorrhages, the blurred vision, the ghastly deliriums persisting far into the puerperium, the inability to recognize the onset of the second stage unless by risk of more frequent examinations, the masking of early symptoms such as antepartum hemorrhage, rupture of the uterus and even eclampsia, the violence and uncertainty of the whole treatment, the general bad impression given to our patients who are being taught to approach the "horrors of labor" in fear and trembling, constitute so severe an arraignment of this treatment of labor cases that we feel compelled to condemn it, leaving open the question of the merits of a single dose of morphin and scopolamin in those cases in which we have hitherto given morphin and atropin.

**New Feature of Antifly Campaign.**—At Buffalo in order to encourage and promote the antifly campaign the health department has inaugurated the plan of granting a certificate to the proprietors of all places of business who will make war on flies and certify on honor that there were no flies in their places on the first days of June, July, August and September. This it is believed will prove effective in increasing efforts against the fly nuisance. As suggestions in the way of fly extermination and prevention the following are offered: "Kill all winter flies, the egg-layers; clean up the premises and keep them free of dirt, refuse, manure, garbage, etc., the breeding places; screen all windows and doors; cover garbage cans and manure boxes; place fly traps in April; get the neighbors interested."

## SCOPOLAMIN AND NARCOPHIN SEMI-NARCOSIS DURING LABOR *

WALTER E. LIBBY, M.D.

Assistant in Obstetrics and Gynecology, University of California Medical School

SAN FRANCISCO

The conservative attitude of American physicians toward the use of scopolamin and morphin during labor has been chiefly due to the lack of uniformity in the results obtained in the various German clinics, for in that country the method was devised and has been steadily improved. In a number of obstetric cases recorded by Schneiderlein,[1] anesthesia obtained by this means proved fatal in one instance, and subsequently the use of these drugs for the purpose of obtaining complete anesthesia has not been advocated. A smaller dosage, as Steinbuchel[2] found, would induce seminarcosis which was safe for the mother. While in this state the patient may be sensitive to pain but is unable to remember that she suffered, or in fact, to remember anything which occurred during the course of labor. This method of treatment, therefore, does not produce anesthesia, but seminarcosis and amnesia.

Steinbuchel's technic, however, did not yield satisfactory results in the hands of Gauss,[3] who was stimulated to seek better means for regulating the administration of the drugs. Later Straub sought a more stable preparation of scopolamin. Such precautions were necessary to prevent overdosage and to avoid decomposition products of scopolamin which are toxic. Gauss believed that administration of these decomposition products, especially apoatropin, accounted for the untoward symptoms which Hocheisen[4] frequently observed and which led him to denounce emphatically the use of scopolamin in any case. But, even after the required stable preparation had been procured and the technic standardized to give uniform results in Freiburg, the reports from other European clinics varied. In Berlin, for example, Strassman[5] observed when scopolamin and morphin were used that uterine contractions were frequently impaired, and even more frequently that the fetus was asphyxiated; and for these reasons Strassman did not recommend the treatment. On the other hand, the results in Döderlein's clinic in Munich reported by Zweifel[6] have been encouraging.

The fact that efforts are being made continually to simplify and perfect the method also indicates that it is still in the experimental stage. In May, 1914, Siegel,[7] one of Krönig's assistants, reported a series of 220 cases in which narcophin was used to replace morphin. The repeated administration of both drugs was based on a time-schedule, and not on various tests which Gauss has employed. Siegel came to the conclusion that narcophin had less effect than morphin on

* From the Woman's Clinic of the University Hospital.

1. Schneiderlein: Die Skopolamin-Morphium Narkose, München. med. Wchnschr., 1903, i, 37.
2. Steinbuchel: Schmerzverminderung und Narkose in der Geburtshilfe mit spezieller Berücksichtigung der kombinierten Skopolamin-Morphium Anaesthesia, Leipzig and Vienna, 1903.
3. Gauss: Geburten in künstlichem Dammerschlaf, Arch. f. Gynäk., 1906, lxxviii, 579; Bericht über das erste Tausend Geburten im Skopolamin Dammerschlaf, München. med. Wchnschr., 1907, p. 157.
4. Hocheisen: Ueber Geburten unter Skopolamin-Morphium, Ztschr. f. Geburtsh. u. Gynäk., 1907, liv, 131.
5. Strassman: Die Schmerzstillung bei der Geburt, Berl. klin. Wchnschr., 1911, xlviii, 982, 1046.
6. Zweifel: Ueber Morphium-Skopolamin Dammerschlaf, Monatsschr. f. Geburtsh. u. Gynäk., 1912, xxxvi, 719.
7. Siegel: Schmerzlose Entbindungen in Dämmerschlaf unter Verwendung einer vereinfachten Methode, Deutsch. med. Wchnschr., 1914, xl, 1049.

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the child and that the lapse of a given interval of time could generally be relied on as an indication for the need of additional doses of one or both drugs. As this report represented the last word from the Freiburg clinic and the results were as good as, if not better than, those previously reported we selected for trial the procedure which Siegel recommended. My conclusions, therefore, are based on the observation of thirty-five cases in which scopolamin and narcophin were administered. All the patients had normal pelves and in every instance the fetus presented by the vertex. In other words, if normal obstetric conditions did not prevail, we have not ventured to employ the treatment; nor have we used it in the case of elderly primiparas.

In each instance the treatment was started when there was definite evidence that labor had begun, or when the patient was admitted to the hospital somewhat advanced in labor. The first dose has usually been given when the pains were from five to ten minutes apart, and at this time the cervical dilatation was found to be 2 cm. or more in the case of primiparas, 4 cm. or more in the case of multiparas. In the earlier cases of the series the sequence of doses was arranged according to Siegel's schedule, but later it was found more satisfactory to depart somewhat from that routine.

SIEGEL'S SCHEME OF DOSAGE

| Dose | Amount | Interval |
|---|---|---|
| First | Scopolamin .00045 gm. (1.5 c.c.)<br>Narcophin .03 gm. (1 c.c.) | |
| Second | Scopolamin .00045 gm. (1.5 c.c.) | 45 minutes after first dose. |
| Third | Scopolamin .00015 gm. ( .5 c.c.)<br>Narcophin .015 gm. ( .5 c.c.) | 45 minutes after second dose. |
| Fourth | Scopolamin .00015 gm. ( .5 c.c.) | 1½ hours after third dose. |
| Fifth | Scopolamin .00015 gm. ( .5 c.c.) | 1½ hours after fourth dose. |
| Sixth | Scopolamin .00015 gm. ( .5 c.c.)<br>Narcophin .015 gm. ( .5 c.c.) | 1½ hours after fifth dose. |

According to Siegel's scheme, subsequent doses are administered every hour and a half as illustrated in the latter part of the table, and narcophin is added to every third dose of scopolamin. Thus the third, sixth and ninth doses contain scopolamin 0.00015 gm. and narcophin 0.015 gm. The intervening doses consist simply of scopolamin.

If this schedule was implicitly followed, we found occasionally that uterine contractions ceased, or the infant was born deeply asphyxiated. Consequently, we have limited the use of narcophin to the initial dose unless the effect of that dose was insufficient or wore off. And I agree with Knipe[8] that it is not always possible to regulate the dosage of scopolamin on a time basis. Nevertheless, such an outline as Siegel has provided will be found very helpful when beginning the use of this treatment, and the schedule has been satisfactory for more than half our cases. Whenever the patient is deeply narcotized and the uterine contractions are becoming impaired, the next dose indicated in the schedule should be deferred or dropped altogether.

Our solutions were prepared in the hospital pharmacy from the scopolamin manufactured by Hoffman-La Roche and from the narcophin manufactured by Boehringer Söhne, since these were the preparations Siegel recommended. The solutions were made so that 1 c.c. of the one contained 0.0003 gm. scopolamin, and 1 c.c. of the other 0.03 gm. narcophin. At any one time only small quantities of the solution were prepared, for it is most important that fresh solutions be used. With age they deteriorate and become ineffective, or on the other hand decompose, giving rise to toxic substances. If a white flocculent precipitate appears in the scopolamin solution, it should be thrown away. Following the use of such a mixture, Gauss observed severe postpartum hemorrhage and deep asphyxia of the infant.

The drugs were administered with an ordinary hypodermic syringe. At the time when the required dose included both scopolamin and narcophin, the solutions were mixed in the syringe. The site of injection was the upper arm; first one and then the other was utilized. A subsequent local reaction was noticed in one case but this was negligible. The average number of doses of scopolamin administered was from five to six; the largest number was thirteen and the smallest two.

Except in five cases, chloroform inhalations were employed toward the conclusion of the second stage of labor. These exceptions were made in order to learn what conditions prevailed if scopolamin-narcophin narcosis alone was employed, as the head passed through the vulva. These patients were multiparas and, although they remembered nothing of the delivery, I believe that aseptic measures can be better carried out if chloroform is administered.

Our cases included eighteen primiparous and seventeen multiparous women. As has been frequently noted, patients differ in their susceptibility to the drugs in question, and such differences bear no relation to parity. Approximately 17 per cent. of our cases (six instances) not only experienced pain and remembered it, but also remembered other things which happened while they were in labor.

In a typical successful case the first effects appear about fifteen minutes after the initial dose. The patient experiences a "heavy feeling" in her head, and becomes drowsy; later she falls asleep to awaken with each painful uterine contraction. Generally, when an attendant enters the room the patient will pay no attention and, if questions are asked, she may seem unable to comprehend their meaning. Muscular twitchings were noted in twenty-three instances. Similarly, in about two-thirds of the cases thirst was a conspicuous symptom.

Not infrequently circulatory disturbances were observed, but these have never been of an alarming character; and it is difficult to decide to what extent these symptoms should be attributed to the treatment. Some of them are familiar during the normal course of labor as, for example, flushing of the face, which in this series appeared twenty-four times. Marked injection of the conjunctivae occurred four times.

Variations in the pulse rate were not uncommon during the early part of the narcosis. The most extreme effect of this sort was exhibited by a patient whose pulse varied between 64 and 140. Arrhythmia also was occasionally observed. A slight acceleration of the pulse occurred in half our cases, most frequently after the second or third injection. Subsequently, there was a tendency for the count to become normal; but in seven cases the pulse rate varied notably during the whole course of labor. On the other hand, respiration was not affected by the dosage we have used.

Generally, as the narcosis became more and more profound, the patient was inclined to sleep, or at least remained quiet and unconcerned. As a rule, when aroused and given instructions she obeyed (thirty

8. Knipe: The Freiburg Method of Dammerschlaf or Twilight Sleep, Am. Jour. Obst., 1914, lxx, No. 6, p. 884.

cases), but in two instances while the directions seemed to be understood, the patient would make no effort to bear down. Occasionally toward the end of the second stage of labor, patients became excited, even violent, and almost unmanageable. This complication occurred in three instances (about 8.5 per cent.); according to other observers, its frequency is as follows: Gauss 1.4 per cent., Preller[9] 1.7 per cent., Hocheisen 10 per cent., Steffen[10] 13 per cent., and Mayer[11] 26 per cent.

A prolongation of labor due to the use of scopolamin and an opiate has always been admitted, and may occur in a fourth of the cases (Hocheisen, Steffen, Avarffy[12]). Strong advocates of the treatment estimate the amount of prolongation as something less than we have found. From our observations it appears that labor may be prolonged three or four hours in the case of primiparas. In multiparous women there is an average delay of an hour. Thus, the average duration of the first and second stages in this series was twenty-one hours in the case of primiparas and twelve hours in the case of multiparas. The corresponding figures for normal cases are eighteen and eleven hours, respectively.

In the first stage of labor the contractions may or may not be impaired. Approximately four fifths of our patients were unaffected, but in the remaining cases the contractions became weaker and the interval between them longer. In two instances, contractions ceased completely after three doses; there was an interval of two hours in one instance and three in the other before they were reestablished. With both these patients the treatment was begun early in labor, and evidently it is exceedingly important that the "pains" become regular, and at least ten minutes apart before the initial dose is administered.

Unless frequent examinations are made, it becomes difficult to determine when the first stage ends. Generally, we have employed rectal examinations, and have based our estimates on those findings. However, it is noteworthy that as a rule, patients who have been quiet become restless when they enter on the second stage of labor. This observation has a practical significance, for, if seminarcosis is employed, the obstetrician must learn when the cervix is fully dilated in order to instruct the patient to bring voluntary effort into play. If not told to do so, while under the influence of scopolamin and narcophin, she will not assist the expulsion of the fetus. Generally the response to advice is prompt and satisfactory; otherwise pushing down on the fundus or grasping the hands and pulling on the arms of the patient at the proper moment usually arouses her to employ her abdominal muscles. Once the idea is grasped, there is no trouble in securing continued cooperation. The retardation of the second stage of labor chiefly depends on the difficulty of getting the patient to bear down.

Pituitary extract was given in nine cases and was effective in only three. But in no case was more than one dose administered. It is pertinent that in two instances in which the pituitary extract had no effect there was also no narcotic influence from the scopolamin and narcophin, although in one case eight doses had been given according to Siegel's schedule, and in the other case eleven doses. We have found that pituitary extract does not stimulate patients in seminarcosis to employ their abdominal muscles.

There was a frank indication for the use of forceps — usually after pituitary extract had failed — in six cases in this series, four primiparas and two multiparas. Twice the operation was a mid and four times a low forceps. In all these cases, although the patient had been in the second stage two hours, there was no advance. The failure to progress was explained more frequently by the patient's lack of inclination to assist herself than by inefficient uterine contraction. Two patients who required the use of forceps were unmanageable in the second stage, and after the lapse of two hours were delivered under chloroform anesthesia. In another case no effect had been secured from scopolamin and narcophin, and forceps were employed on account of a rigid perineum. Excluding the last instance, the frequency of forceps operation (14 per cent.) remains greater than we have previously been accustomed to. And our experience accords with that of Fehling, who considers that if scopolamin is used, the frequency of operations is approximately doubled.

The third stage of labor was uninfluenced by the administration of scopolamin and narcophin. In one instance an hour after the patient was delivered a moderate postpartum hemorrhage occurred, but this was due to temporary atony such as we encounter once in every forty or fifty multiparous patients, even though delivered without any anesthetic. Massage and pituitary extract were promptly effective, and the excessive bleeding did not recur.

Following labor the narcosis passed away in from two to four hours. The return to normal mental conditions, however, depends on a number of factors, as the amount of the drugs administered and the extent to which the patient is aroused by her attendants and surroundings. The puerperal convalescence is uninfluenced; as one makes rounds of the wards he cannot distinguish patients who have received scopolamin and narcophin during labor from those who have not.

Obviously, the effect of scopolamin and narcophin seminarcosis on the fetus is a matter of prime importance. During the labor the fetal heart sounds were observed as a routine every half hour, and in some cases more frequently. In no instance was there an appreciable effect on the character of the sounds, and also the effect on the rate has been negligible. The lowest fetal heart rate was 116, and the highest 176. Naturally, in individual cases there has been some variation between the counts made at different times, but again here we have not noted anything unphysiologic. The difference between the highest and the lowest counts averaged 17 beats to the minute.

While delivery was taking place, meconium was passed in four instances, but none of these infants was deeply asphyxiated, and two cried as soon as they were born.

The establishment of respiration in the new-born infant is frequently delayed when the mother receives scopolamin and narcophin during labor, and in these circumstances the delay depends on the narcotized state of the infant. Slight asphyxia (oligo-apnea) was present in six instances; but in these cases there was no cause for anxiety, for a few slaps on the back promptly made the infant cry. Deep asphyxia (apnea) also

9. Preller: Zur Anwendung von Skopolamin-Morphium in der Geburtshilfe, München. med. Wchnschr., 1907, liv, 161.
10. Steffen: Zur Skopolamin-Morphium Wirkung bei Geburten, Arch. f. Gynäk., 1907, lxxxi, 451.
11. Mayer: Skopolamin-Morphium bei Geburten, Zentralbl. f. Gynäk., 1908, xxxii, 689.
12. Avarffy: Der Skopolamin-Morphium Dammerschlaf in der Geburtshilfe, Gyn. Rundschau, 1909, iii, 338.

occurred in six cases (17 per cent.), and although all these infants were resuscitated, vigorous measures were required for a period of fifteen or twenty minutes. Most of the cases of apnea occurred early in our experience. It is also noteworthy that deep asphyxia appeared most frequently when the mother received only a few doses of the treatment. This fact, we believe, is explained by the relatively larger dosage of narcophin at the beginning than toward the end of Siegel's schedule. Acting on this conviction, whenever the first stage of labor was well advanced before the treatment was begun, we have made it a rule to give only the initial dose of narcophin. Moreover, in all cases the administration of the opiate should be guided by the requirements of the individual patient — not by a time schedule. Since we adopted these precautions, cases of asphyxia have become less frequent. But our experience teaches that narcophin is open to the same objection as morphin, and its use offers no advantage over that of morphin.

Another precaution of no slight importance consists in making the infant cry lustily as soon as it is born. If the physician is content that regular respirations have become established, and before the baby cries entrusts its supervision to a nurse, he may later be notified that the baby has collapsed. In a case of this kind, although only a few minutes had passed since the infant was handed to the nurse, we had considerable difficulty in reviving it, and half an hour elapsed before we were successful. In any case, if scopolamin and an opiate have been used, the infant should be carefully watched for at least an hour and sometimes longer, for the drugs are transmitted through the placenta, and a smaller or larger amount of them is present in the fetal circulation at the time of birth.

None of the infants in our series died as a result of the use of the drugs in question. However, there was one fetal death which occurred on the second day after birth. Clinically the diagnosis was malformation of the heart, and the necropsy revealed a perforate interventricular septum, stenosis of the pulmonary valves, and marked dilatation of the pulmonary artery. Evidently these lesions were congenital.

After the first day of life, the effect of scopolamin and narcophin on the infant may be disregarded. In their development, the infants whose mothers have received this treatment behave like others. There is the customary initial loss of weight, and this is not exaggerated. The birth weight is regained toward the tenth day, as in other cases. Furthermore, this method of narcosis exerts no baneful influence on lactation.

It is the difficulty occasionally encountered in resuscitating the infant which provides the chief objection to the use of scopolamin and an opiate during labor. And while we have met no case in which resuscitative measures failed, the prolonged efforts occasionally required enable us to understand that fetal deaths may result from the treatment. In Chrobak's clinic, one fetal death in 107 cases seemed chargeable to scopolamin and morphin, and Avarffy recorded one fetal death in fifty cases.

On the other hand, we are strongly encouraged by the testimony of mothers to continue the use of scopolamin and narcophin seminarcosis in obstetric cases. In those which we have observed, approximately four fifths (twenty-nine patients) remembered nothing which happened after they were under the influence of the drugs, and were unaware that the baby was born until they were told; therefore, these may be counted successful cases. Patients always have a clear recollection of the first dose, frequently of the second and sometimes of the third. As a rule, satisfactory narcosis is secured between the second and third doses, about two hours after the treatment is begun.

In two instances—so-called partial successes—there was a clear memory of everything which happened during labor, but these patients considered that the treatment had modified their suffering. In four instances the treatment had no effect whatever on the mother. Therefore, our experience teaches that once in six or seven cases (17 per cent.) scopolamin and narcophin will not have the effect for which they are administered. Siegel also admits 12 per cent. of failures. Similar results are observed if morphin is used in place of narcophin. Thus, Tischauer,[13] who collected 2,270 cases, found that the frequency of failures, in the reports of observers outside of Freiburg varied from 20 to 54 per cent.

No injurious effect on the mother was encountered in our experience, but it must not be forgotten that we have rejected cases in which complications of labor were anticipated. With this caution, and if the patient understands that some difficulty occasionally arises in reviving the child, her wish to receive scopolamin and morphin or narcophin seminarcosis during labor may be complied with. However, physicians must recognize that the method has not reached the perfection which warrants indiscriminate use. For example, even moderate degrees of pelvic contraction make it inadvisable to employ seminarcosis, for in these circumstances its effects may diminish the chances for spontaneous delivery and occasionally necessitate the performance even of major obstetric operations. Similarly, the primary inertia not infrequent in the case of elderly primiparas constitutes a contraindication to the use of scopolamin. For the present, therefore, it would seem advisable to employ this drug only when there is every indication that the patient will pass through a normal confinement.

An intimate knowledge of obstetrics is required if physicians wish to administer seminarcosis successfully, for sound judgment must be exercised not only in the selection of cases but also in the management of labor. The supervision of patients who are under the influence of scopolamin and an opiate requires competent assistants. For this reason, and also because the frequency of operative procedures is increased, good hospital facilities are desirable. However, such precautions do not mean that the method is impracticable and that it ought to be discarded. On the contrary, the very satisfactory results in the majority of cases provides the stimulus to secure further improvements in the method which will broaden its field of application and remove its objectionable effect upon the new-born infant.[14]

13. Tischauer: Das Skopolamin-Morphium in der Geburtshilfe, Inaug. Diss., Freiburg, 1911.

14. In addition to the references already given, the following will be found of interest:

Bass: (Chrobak's clinic): Hundert und sieben Geburten in Skopolamin-Morphin Halbnarkose, München. med. Wchnschr., 1907, p. 519.

Fehling: Die Geburt im Dammerschlaf: Fruhaufstehen im Wochenbett, Strassb. Med. Ztg., 1909, vi, 14.

**Prognosis.**—I suppose prognosis is more difficult than diagnosis, because in the latter one still has Nature in consultation; when it comes to a question of prophecy, the doctor is pitting his opinion against that of the Senior Practitioner. —Adolphe Abrahams, *Practitioner*, March, 1915.

# MECHANICS AND PATHOLOGY OF TUBERCULOUS HIP-DISEASE IN THEIR RELATION TO ITS DIAGNOSIS AND TREATMENT

P. W. NATHAN, M.D.
NEW YORK

Some years ago, when I began a study of the cases of hip-disease which were then, and had been treated at the Hospital for Ruptured and Crippled, I began, at the same time, to study the literature on this subject. I soon discovered that there existed a great diversity of opinion regarding the treatment of this condition.

It was admitted on all sides that we were dealing with a disease for which we had no specific remedy, and that our only resource was to treat the condition from a purely mechanical point of view. As usually stated, the idea was to maintain the affected limb at rest in order to allay the inflammatory reaction; it was to be held in a manner which would permit of locomotion, so that the patient might obtain the benefit of fresh air and exercise; and finally the brace or apparatus to be used for this purpose should be so constructed that the limb would be in the best possible position for locomotion when the disease was cured or arrested.

In a word, the treatment for tuberculous hip-disease was, and, for that matter, still remains, a question of mechanics.

Now mechanics, as is well known, is a mathematical science. Such being the case, there should not be a diversity of opinion as to the mechanical requirements or the methods of fulfilling them. Given similar conditions, the indications must be similar. Hence, with a diversity of opinion as to the methods, it must be assumed that some or all of the methods in use for the treatment of hip-disease are inadequate.

It was in order to discover, if possible, the exact mechanical requirements to be fulfilled in the treatment of hip-disease, that I then began the study of the anatomic mechanics of the normal, as well as the tuberculous hip-joint, in connection with my clinical studies. The results of these studies cannot be presented in their entirety at present. I feel, however, that the importance of the subject justifies the presentation of some of the conclusions, though there can be only a brief allusion to the details of the work on which they are founded.

I shall call attention only to the few anatomic and mechanical details which bear directly on the questions to be discussed.

Of all the organic joints, the bones of the human hip-joint most closely resemble ideal geometrical figures. The head of the femur is part of an almost perfect sphere; it is, during life, closely embraced by the acetabulum and the cotyloid ligament; and these together form an almost perfect ball and socket joint. Hence this joint is in every way comparable to the inorganic ball and socket joint of the technician, and as such, is subject to the same mechanical laws and advantages.

Unfortunately, with the advantages which this perfect mechanical form brings, there exists the disadvantage, that slight incongruities of the articulating surfaces lead to marked impairment of function. It is for this reason that conditions which in other joints, would cause only a slight impairment of function, that in time might be compensated for, lead to marked and often permanent damage in the hip-joint.

The extent of motion in the hip is considerably augmented by the length and slenderness of the neck. Here again the mechanical advantages of the structure are in a measure offset by the disadvantages which arise from this form; namely, great liability to distortion and consequent impairment of function under pathologic conditions.

In by far the majority of cases of tuberculous hip-disease, the lesion lies in the articulating bones. Roentgenoscopy in a large number of cases has borne out the pathologic investigations of the older writers in this respect. My own investigations have led me to believe that not only are the bones practically always affected, but that, in the majority of cases, the bone lesion is the primary one.

In a small percentage of cases the lesions may be in the neck outside of the capsule or in the trochanter, and, remaining so, the joint does not become involved. When this is the case the patient of course recovers with perfect joint function.

In by far the greater number of cases, the bones within the articulation are affected. In my own cases, the neck, the head, and the acetabulum were primarily affected in about the same proportions.

No matter where the disease begins it rarely remains focal. Not only does the actual focus extend, but surrounding it for some distance is an area of inflammatory atrophy, which, in the milder cases, may be moderate and more or less limited in extent. In the average case the inflammatory atrophy is marked and extensive; and in the severe ones, it leads to extensive bone absorption; separation or absorption of the head; complete absorption of both the head and neck, deepening or enlargement of the acetabulum alone, or in combination with the previously mentioned changes in the femur.

These changes depend on the character of the pathologic condition. I have seen them occur in cases treated by all known procedures. Braces, bed extensions, plaster spicas long and short, are powerless to prevent them.

Any one who will follow a large series of cases, treated according to any method will find this to be true. I have roentgenograms of a number of cases treated by means of the long-extension hip-brace (which is supposed to prevent absorption and destruction) which illustrates the usual course of events.

Hence, it is evident that not only have we no specific remedy, but we have not even the means to prevent or check the mechanical damage induced by the pathologic process.

This being true, what is the ultimate outcome of the condition? As we have no apparatus which will prevent atrophy and absorption, can we by the use of an apparatus retain the parts in their normal relations until some reparative process will restore, in a measure, the normal density, contour and relation of the affected parts? My experience leads me to believe, that restorative processes in hip-disease are practically absent.

If one follows the course of a number of cases of hip-disease, making frequent careful clinical and roentgenographic examinations it will be found that the course and final outcome will only vary within certain limits.

All the cases seen during the early stages will present nothing more than the symptoms of hip irritation;

that is, the same reaction which any inflammatory or irritative condition in or near the joint will induce. The hip-joint, depending on the degree of the irritation, will be held more or less firmly in a position of flexion, abduction and slight external rotation. It is held in this position not because there is a specific irritation of the muscles which maintain this position, but because this position produces the most complete relaxation of the hip under the existing mechanical conditions. Because of the course of the muscles which surround the hip-joint and the peculiar construction of the capsule and its accessory ligaments, this position must be assumed in order to produce relaxation. Whether the position assumed is voluntary or involuntary is beside the question.

At this stage it is impossible to make a positive diagnosis of tuberculous hip-disease, for the same symptoms will be present in all forms of inflammation in the joint or its neighborhood. In my own cases, I consider that I am not dealing with tuberculous disease when patients presenting these symptoms get well with perfect function, unless I can demonstrate an extra-articular focus by means of the roentgenogram.

Even when, as the subsequent course of the disease demonstrates, we are dealing with tuberculosis, roentgenoscopy shows definite changes in only a small percentage of cases at this time. I have rarely been able to demonstrate an actual focus during the early stages.

After a variable length of time, a symptom-complex occurs, which the older writers describe as the second stage of the disease. It has been the practice of late years to ridicule this division of the disease into two stages; yet, though the transition is gradual and the two stages of the disease cannot always be definitely separated clinically, what has been called the second stage of hip-disease undoubtedly corresponds more or less closely to certain definite pathologic and mechanical conditions.

It is at this stage that the bone atrophy and bone absorption with the consequent deformation begin. The course from now onward can be traced by roentgenoscopy. We are by this means enabled to say definitely whether or not we have femoral or acetabular disease or both.

Clinically, both these conditions manifest themselves in the same way so far as the deformity is concerned. That is, in both these conditions the result is adduction deformity.[1]

The adduction like the abduction deformity is due, not to the specific nature of the disease, but to mechanical conditions. As has been said, the abduction is assumed to relax the hip-joint. That this position cannot be retained by muscular action alone, irrespective of other conditions, must be self-evident to every one with a knowledge of muscle physiology and mechanics. Whether the muscular contraction which holds the hip in the abducted position is caused by so-called muscular spasm or is voluntary, the power of the muscles engaged in producing this position is entirely inadequate to retain it for any great length of time. The force of gravity soon overcomes it, and when there is no deformation (for instance, in synovial conditions which, by the way, are much more uncommon in the hip than in the knee) the limb will fall and will finally become adducted, unless prevented from doing so by some external force.

When there is no deformation of the bones the cause of the adduction deformity lies in the efforts of the patient to save the leg from weight-bearing. Unable to retain the abducted position to relax the hip, the patient tilts the pelvis on the other hip so that the foot of the affected limb barely touches the ground. This position becomes permanent, that is, we have what is known as adductor contracture; not because the adductor muscles contract actively, but because the distance between the origin and insertion of the adductors is lessened, and according to physiologic laws these muscles accommodate themselves to this distance. When there is deformation of either the femoral or acetabular part of the articulation, the normal angle between the neck and shaft of the femur or the normal angle between the mechanical long axis of the limb and that of the shaft of the femur is so changed that mechanically the limb must become adducted.

The position of adduction will occur either during or after treatment in practically all cases of hip-disease, unless the limb becomes firmly ankylosed in the abducted position. If the patient has been on a brace, the brace sometimes, certainly not always, will hold the limb in a straight line for the time being. As soon as the patient begins to walk, however, he acquires an adduction deformity. Cutting the adductors, stretching and even osteotomy of the femur will not prevent its recurrence.

It is needless to discuss the disadvantages of this position. Yet disabling as this deformity is known to be, it does not approach the disability caused by acetabular disease. In this case the femoral head is gradually pushed upward as soon as there is weight-bearing, until it becomes subluxated or completely dislocated. Such patients not only have an adduction deformity but must bear the weight of the limb on the more or less completely destroyed capsule and the gluteal muscles. The result is that these patients not only walk badly, but are exceedingly subject to hip-strain.

In all cases of recovery from hip-disease with distortion and motion, the final functional result, that is, the result in adult life (which is the only result to be considered), is poor in every respect.

Thus from a careful consideration of the anatomy, the physiology and the mechanics, I have been led to exactly the same conclusion as that arrived at by Lorenz empirically. That is, to judge from the pathologic and mechanical conditions, I believe that the only result which can give the patient a really useful limb in adult life is one with bony ankylosis.

Whether or not we can attain this result by means of the short spica is another question. There can be no doubt that the ultimate mechanical requirements are much more likely to be fulfilled when the limb is held in the most advantageous position with regard to weight-bearing, than with any of the methods of

1. The location of the disease, when it is not so acute that the patient resists all attempts to move the joint, can in a measure be ascertained by physical signs. From the examination of many cases, comparing the joint symptoms with the roentgenogram and what the mechanics of the condition would lead one to expect, I have learned to locate the site of the disease even without roentgenoscopy. For example, a high trochanter with limitation in abduction, the other movements being free, is indicative of acetabular disease. When all motions are limited except flexion and extension (rare in tuberculous hip-disease but not so uncommon in senile osteo-arthritis of the hip), there is central acetabulum disease leading to intrapelvic displacement of the head of the femur; when the neck alone is involved the objective signs closely resemble those of coxa vara, though in tuberculous hip-disease there is more general limitation of motion. A high trochanter with limitation of motion in all directions is indicative of marked deformation of the head of the femur. It must be remembered, however, that these differential signs can only be made out after the acute irritative symptoms (because the joint has been immobilized or the disease is arrested) have subsided.

treatment at our disposal at present. The tuberculous process in the bones is attended by a minimum of inflammatory reaction. It is only by weight-bearing or motion that we can stimulate the reaction processes to bone formation and thus increase the prospects for bony ankylosis.

Even when the treatment with the spica and weight-bearing is conscientiously carried out, unfortunately we do not always succeed in securing an ankylosis. I firmly believe that we should seek to produce ankylosis in all cases in which there is deformation or much atrophy, by operative measures as soon as the disease has become quiescent.

As all who have attempted to operate on these patients know, the conditions for operation are unfavorable in adult life. The exposure is difficult, the tissues are resistant and the adult does not withstand the operative measures nearly so well as do children. In children, on the contrary, the exposure is easy, the tissues are elastic and the operative risk is practically nil. Moreover, I think it a mistake to attempt to save atrophied bone. Healthy bone-surfaces should be brought into apposition, and weight-bearing, with the proper precautions, should be encouraged as soon as possible after the operation. It is of course ridiculous to expect stumps of atrophied bone to bear the weight of the body; they should be removed and if necessary the trochanter should be brought into contact with the denuded acetabulum.

Concerning the plaster spica treatment, the hip should be retained as nearly as possible in the middle position, that is, slightly flexed, abducted and only slightly rotated out. Eversion is a disabling deformity and should be scrupulously avoided. The spica, except when it is applied for the relief of irritative symptoms, need not, nor will it when it extends only to the knee, completely immobilize the hip.

It is, of course, impossible to give details; when a patient should be in bed, and when he should be up, will depend on the circumstances. Above all it should be remembered that there can be no invariable rules; for in every case the mechanical and pathologic conditions must be met as they appear in that particular instance. So, for instance, in the isolated acetabular cases, with enlargement of the acetabulum, it is often difficult to attain bony ankylosis, and sometimes impossible to prevent subluxation or dislocation even when the spica is worn constantly. In such a case I have used a Thomas knee-brace, so modified that there is a sole plate instead of extension rods and a snap joint at the knee, when the condition has become quiescent. In a number of cases so treated, I have been successful in preventing luxation for some years, even after the brace was removed. As none of these individuals have as yet attained their full height and weight, however, I do not know whether or not the result is permanent.

The conclusions here presented are based on a study of about two hundred cases. Particular attention was given to final results. By final results I do not mean that the condition at the time the patient was discharged with the disease supposedly arrested or cured, but the condition after such an individual had used his affected hip during adult life. I place absolutely no reliance on statistics, particularly those obtained by letter from patients or their family physicians who live at a distance.

The results of the study here presented in a somewhat general way may be summarized as follows:

Tuberculosis of the hip is a destructive disease, which practically always leads to marked impairment of the joint structures. So far as we know, there is no treatment which will prevent or limit the destructive process and we have not, therefore, a method which will prevent permanent impairment of joint function.

Such being the case, it must be admitted that we have no adequate treatment for hip-disease. For the present, we must be content to choose the method which will give the patient the strongest limb to stand and walk on, irrespective of joint motion or shortening.

At present the treatment with the short plaster-of-Paris spica, with all its shortcomings, is better than any other heretofore in use, provided it is scientifically carried out.

110 East Seventy-Eighth Street.

## BENZOL IN LEUKEMIA

F. H. SMITH, M.D.
ABINGDON, VA.

Last year I described two cases of leukemia treated with benzol (benzene, $C_6H_6$) after the plan of Koranyi. This article[1] is so recent that it will not be reviewed here. The extensive bibliography on the subject is also omitted; it was reviewed then, and Sappington and Pearson[2] have given a list of the articles on the subject to the date of their own.

Suffice it to say now that the patient with lymphatic leukemia referred to has since died. As suggested, benzol was discontinued shortly after the paper was printed because it seemed to have no effect on the leukemic process. So far as we could see, benzol neither helped nor harmed the patient.

The second case, one of the splenomyelogenous type, has been under observation almost continuously since Aug. 23, 1913, nineteen months. The length of treatment exceeds any that I have seen recorded, itself a matter of interest. The case is interesting, furthermore, because of the confirmation of some of my impressions expressed a year ago: until now certain fixed opinions relative to the worth of the drug and its dangers have been arrived at.

The mass of data accumulating in so many months may be omitted; that part of them which seems to have a bearing is given in the accompanying table.

The several features of this table stand out almost without the need of comment. What I shall have to say is more in the way of the conclusions to which they seem to lead.

A year ago I expressed the opinion that "benzol is a remedy of remarkable potency in myeloid leukemia." In spite of all that follows which may seem to argue to the contrary, I am convinced that it is the most helpful of all known agents in the treatment of leukemia of this type. When it is recalled that the patient under consideration was a boy of 13 years when the treatment was started; that his spleen then occupied about four fifths of the abdominal cavity, and that the leukocytes numbered 499,000, one is justified in expressing surprise that he is still living.

1. Smith, F. H.: Benzol Treatment in Two Cases of Leukemia, THE JOURNAL A. M. A., March 21, 1914, p. 921.
2. Sappington, S. W., and Pearson, W. A.: The Leukemias under Benzol, THE JOURNAL A. M. A., July 11, 1914, p. 143.

Such a case in an adolescent would have been generally conceded to be hopeless prior to the benzol treatment. "There is no known remedy that seems even to stay the course of the disease. Once the diagnosis is positive, the case is hopless."[3] Yet this boy is still living, is attending to his school duties, expresses himself as being entirely well, and on casual observation would seem so.

That the result is due to benzol cannot be reasonably questioned. There has been no other treatment than that indicated in the table. Even a casual inspection of the table will force the conclusion that the dose may in course of time become actually stimulating to leukocytic generation. Larger doses have so far not been necessary, and as with all potent drugs, one's desire should be to keep the dose within the limits of potency on the one hand, and of safety on the other.

A second statement of a year ago is also amply confirmed: "Beyond a doubt, 'benzol is a two-edged sword.'" There is nothing more certain in benzol therapy than this: the practitioner who prescribes the drug without making frequent blood counts is courting disaster. We have only to point to the blood

COURSE IN A CASE OF SPLENOMYELOGENOUS LEUKEMIA

| Date | W. B. C. | Differential | R. B. C. | Hgb. | Spleen | Medication, Drops |
|---|---|---|---|---|---|---|
| 8/18/13 | 372,000 | Many myelocytes | 3,072,000 | 55 | 4-5 of cavity | None. |
| 8/23/13 | | | | | | Benzol, 5, t. i. d. |
| 8/25/13 | 499,000 | | | | Slight change | Benzol, 10, t. i. d. |
| 9/ 1/13 | 428,000 | | 3,172,000 | 52 | Girth 28.5 in. | Benzol, 15, t. i. d. |
| 9/13/13 | 349,000 | | 3,180,000 | 53 | | Benzol, 20, t. i. d. |
| 9/19/13 | 185,000 | | | | Diminished | Benzol, 22, t. i. d. |
| 9/24/13 | 122,000 | Myelocytes fewer | | | | Benzol, 22, t. i. d. |
| 9/27/13 | 128,000 | | | | | Benzol, 24, t. i. d. |
| 10/ 4/13 | 41,000 | | | | Right abdomen clear | Benzol, 24, t. i. d. |
| 10/11/13 | 10,600 | | | | Left side 1.5 in below navel | Benzol, 20, t. i. d. |
| 10/18/13 | 6,600 | | | | Barely felt lt. costal margin | None. |
| 10/25/13 | 8,400 | Few myelocytes | 5,608,000 | | 1 in. below ribs | Benzol, 10, t. i. d. |
| 11/ 1/13 | 9,750 | | 5,888,000 | 67 | Same | Benzol, 12, t. i. d. |
| 11/ 8/13 | 9,000 | P., 71; S., 18; L., 3; My., 4; Mz., 3; E., 1. | 5,608,000 | 60 | Rib margin | Blaud's pill, t. i. d. |
| 11/15/13 | 10,800 | | | | 1.5 in. below ribs | Blaud's pill, t. i. d. |
| 12/ 6/13 | 9,600 | P., 76; S., 18; L., 1; E., 1; Mz., 2; My., 2. | | | 0.5 in. above navel | Blaud's pill, t. i. d. |
| 12/20/13 | 10,400 | | | | 1 inch below ribs | Blaud's pill, t. i. d. |
| 1/17/14 | 16,200 | P., 56; S., 20; L., 8; E., 5; My., 9; Mz., 2. | | | Half way to navel | Benzol, 10, t. i. d. |
| 2/14/14 | 22,000 | | | | ½ in. above navel | Benzol, 25, t. i. d. |
| 3/ 7/14 | 28,400 | | | | Half-way to navel | Benzol, 20, t. i. d. |
| 3/14/14 | 33,200 | | | | | Benzol, 20, t. i. d. |
| 3/28/14 | 14,800 | | | | | Benzol, 20, t. i. d. |
| 4/11/14 | 27,800 | | | | | Benzol, 25, t. i. d. |
| 4/18/14 | 13,200 | | | | | Benzol, 20, t. i. d. |
| 4/25/14 | 24,200 | P., 59; S., 20; L., 3; E., 5; Mz., 3; My., 10. | | | 1 in. above navel | Benzol, 25, t. i. d. |
| 5/16/14 | 22,800 | | | | | Benzol, 27, t. i. d. |
| 5/25/14 | 15,200 | P., 61; S., 24; L., 7; E., 4; My., 4. | | | | Benzol, 27, t. i. d. |
| 6/ 8/14 | 24,400 | P., 66; S., 23; L., 4; E., 1; Mz., 8; My., 2. | | | | Fowler's solution, 4. |
| 6/15/14 | 16,200 | | | | | Fowler's solution, 4. |
| 6/22/14 | 6,800 | P., 66; S., 28; L., 3; E., 1; My., 2. | | 60 | | Fowler's solution, 4. |
| 7/ 6/14 | 6,700 | | | | | Blaud's pill, t. i. d. |
| 8/ 3/14 | 24,000 | P., 75; S., 6; L., 8; E., 2; Mz., 1; My., 8. | | | | Blaud's pill, t. i. d. |
| 8/10/14 | 36,800 | | | | | Benzol, 20, t. i. d. |
| 8/17/14 | 26,400 | P., 72; S., 10; L., 8; E., 1; Mz., 3; My., 6. | | | | Benzol, 20, t. i. d. |
| 8/31/14 | 13,600 | | 5,384,000 | | Fills upper rt. quadrant | Benzol, 20, t. i. d. |
| 9/19/14 | 15,000 | P., 57; S., 24; L., 10; My., 7; Mz., 2. | | | | Benzol, 20, t. i. d. |
| 10/ 3/14 | 8,200 | | | | | No medication. |
| 10/31/14 | 16,400 | | | | | None. |
| 12/12/14 | 22,000 | P., 52; S., 21; L., 14; E., 1; Mz., 2; My., 10. | 6,448,000 | 84 | Fills upper quadrant | Benzol, 20, t. i. d. |
| 1/23/15 | 18,400 | P., 61; S., 16; L., 12; E., 1; Mz., 1; My., 9. | | | | Benzol, 20, t. i. d. |
| 2/20/15 | 29,200 | | | | | Benzol, 24, t. i. d. |
| 3/ 6/15 | 6,600 | P., 50; S., 30; L., 15; E., 1; Mz., 1; My., 3. | Two normoblasts in count of 100 white cells | | | None. |
| 3/13/15 | 4,400 | | 5,120,000 | 65 | ½ in. below navel | None. |
| 3/27/15 | 13,800 | | | | | Blaud's pill, t. i. d. |

drop in the leukocytic count is directly dependent on the exhibition of the chemical in sufficient dosage.

The effectual range of dosage has also been fixed for this individual case. One notes that only once has a dose of 25 drops three times daily been exceeded; that results have followed a dose of from 20 to 25 drops three times daily (4 to 5 gm. approximately a day). Any less dose seems worse than useless, as this case in one of its phases suggests that the leukopoietic system becomes immune in time to a dose which was leukotoxic perhaps but a short time before. If such a conclusion be true, then the smaller than effective picture of the table to justify the statement that there is no possible way of guessing what the count will be on the basis of the last; and, therefore, of judging whether the dose should be held stationary, increased, decreased or stopped altogether. I am firmly convinced that such judgment must be constantly exercised, under the threat of having the disease jump out of bounds on the one hand, or of producing disaster on the other.

One can guess that the rise of the count after a fall will be slower and more gradual than a drop. This is illustrated several times in the table. Nothing in it is more striking than the abrupt way in which the count drops from a point around 30,000 to 6,000 or

3. Cheney, W. F.: Leukemia in Childhood, Am. Jour. Med. Sc., 1912, cxliii, 22.

7,000. If the blood curve were ruled graphically, the chart would resemble a fever chart of a disease full of crises: it *is* a series of blood crises. In other words, the leukocytes have all along *stepped up* and *fallen down*. Just how gradual will be the step upwards cannot be calculated: one time in two weeks, another, in eight weeks, perhaps. The drop comes abruptly, but what is more important, "when we least expect it," if such an expression can be allowed.

Nowhere can the last sentence be better illustrated, nor can the potential dangers of the drug be better emphasized, than in the happenings recorded as of between June 1 and July 20, 1914. The patient had been getting the largest doses of benzol he had ever had, and at the end of a course extending over four months, it seemed to be making no impression on the leukocytic curve. So it was stopped, for the double reason that the treatment seemed at last ineffectual, and because I was afraid to continue such large doses. My surprise and interest was keen, then, to note a drop from 24,000 to below 7,000. The cells remained at or near this point on no benzol at all for six weeks. There seems but one explanation available, and that just now suggested: After an indefinite time and after an uncertain degree of saturation has been reached, the leukopoietic tissues seem not only to become immune to benzol, but are actually stimulated by it.

The effect of this experience is to cause doubt as to how to handle the drug when the count stays high when we are pushing it. Shall we stop, or shall we continue? I feel that if the patient has already been taking benzol for several weeks and the curve is still ascending, or even at a standstill, the safest plan is to stop it for awhile. The drop may come then. At any rate, one cannot get away from the reported cases in which, under benzol, the leukemia assumed a fulminant form, and the patient rapidly succumbed. Whether or not these flare-ups are due to the benzol is not clear; but there is a type of benzol poisoning which is certain: a practical loss of leukocytes with aplastic anemia superadded.

The leukocytes in stained smear are interesting. The appearance of the white cells indicates degeneration. It is hard to make a satisfactory count; transition forms, difficult to classify, are frequent. This, I believe, is a direct result of the benzol therapy. At least, I have never noted just this difficulty before. At any rate, myelocytes have been present in every smear examined. The red-blood-making tissue has never suffered objectively, unless it be in the last crisis, when for the first time a rare normoblast was found. Yet one must always sense the lurking danger.

Myers and Jenkins'[4] observation of the fluctuation of the size of the spleen, without any regular relation to the fluctuations in the blood count, has ample confirmation in my case. One cannot argue that because the count is normal, the spleen is not palpable, or the reverse.

From my experience I believe that benzol poisoning will be first indicated in the blood in some one of its phases. Though I have been constantly on the watch for other toxic manifestations, I have seen none. It is curious to relate that this boy has seemed for one and one-half years to be normal subjectively. He has never complained, except of frequent "head" and bronchial "colds." These have been as frequent when off as when on benzol. Otherwise his general condition does not seem to vary, whether his leukocyte count is high or low, whether he is taking benzol or not. We still have no proof that benzol is specific. Of one thing I feel certain: it has not, and it will not "cure" in this case. One may doubt whether such dogmatism is ever proper. Suppose the dose were raised? I believe that benzol poisoning would follow, nor is there reason to believe the case would be any nearer a cure for the risk. There is not the constant decrease of the size of the spleen, nor the constant falling off, to disappearance, of the myelocytes that would be expected were the drug's specificity dependent on a higher dose than any I have ventured.

In doubting its specific properties I admit a great disappointment. I had hoped that one more of the number of incurable diseases was soon to give way before specific therapy. Instead of this hope, I am confidently looking forward to the time when in spite of, if not because of, benzol, this patient's leukemia will assume one of three forms: a chronic progression upward of the leukocyte curve, a constant enlargement of the spleen, and ultimate death, just as if there had been no staying treatment, or an acute fulminant picture, in which the increase of the leukocytes will be by leaps and bounds to a high figure; or, on the other hand, a drop in the leukocyte curve will come, will not stop at the normal line, but will continue downward to 500 or thereabouts, with all the other evidences of aplastic anemia.

When all is said, however, concerning the disappointment in train of this experience, and of the dangers that lurk in its unguarded and largely empiric use, the chemical has a most remarkable *inhibiting influence* on the course of the disease. There is no exact analogy that I can think of. Like digitalis, however, benzol may have a distinct place in therapy, even if its action prove short of specific, and merely symptomatic, staying or inhibitory.

4. Myers, J., and Jenkins, T.: Benzol in the Treatment of Leukemia, abstr., THE JOURNAL A. M. A., May 17, 1913, p. 1573.

**The Scope of Embryology.**—The development of the egg has always cast a peculiar spell on the scientific imagination. As we follow it hour by hour in the living object we witness a spectacular exhibition that seems to bring us very close to the secrets of animal life. It awakens an irrepressible desire to look below the surface of the phenomena, to penetrate the mystery of development. The singular fact nevertheless is that during the phylogenetic period of embryological research this great problem, though always before our eyes, seemed almost to be forgotten in our preoccupation with purely historical questions—such as the origin of vertebrates or of annelids, the homologies of germ-layers, gill-slits or nephridia, and a hundred others of the same type. Now, these questions are and always will remain of great interest; but embryology, as at last we came to see, is but indirectly connected with historical problems of this type. The embryologist seeks first of all to attain to some understanding of development. It was therefore a notable event when, in the later eighties, a small group of embryologists headed by Wilhelm Roux turned away from the historical aspects of embryology and addressed themselves to experiments designed solely to throw light upon the mechanism of development. The full significance of this step first came home to us in the early nineties with Driesch's memorable discovery that by a simple mechanical operation we can at will cause one egg to produce two, or even more than two, perfect embryos. I will not pause to inquire why this result should have seemed so revolutionary. It was as if the scales had fallen from our eyes. With almost a feeling of shock we took the measure of our ignorance and saw the whole problem of development opened.—Edmund B. Wilson, *Science*.

# GASTRO-INTESTINAL STUDIES

## V. THE PROTEIN CURVE OF GASTRIC DIGESTION IN NORMAL AND PATHOLOGIC CASES *

J. ALEXANDER CLARKE, JR., A.B.
AND
MARTIN E. REHFUSS, M.D.
PHILADELPHIA

### TECHNIC OF THE REACTION AND FALLACIES OF THE TEST

Within recent years considerable interest has been shown in the study of the protein content of the gastric juice owing to the application of methods for the determination of this content in arriving at a differential diagnosis of carcinoma of the stomach and benign achylias. But little interest was manifested in the importance of the protein content in other conditions in which the acidity was present or pronounced. Furthermore, all methods which were evolved toward a solution of this problem considered the protein content merely from the point of view of a single phase in the gastric cycle. By means of a method recently devised by one of us, it has been possible to study the protein content systematically in every phase of digestion and to obtain data of importance. We have made a study of the principles underlying the reaction and shall endeavor to point out the fallacies connected with the ordinary method of examination. The regular Wolff technic[1] was used with slight modifications, but instead of testing the protein content at the one-hour interval, we tested specimens[2] throughout the entire period of digestion.

Readings were immediately made and the tube giving a ring at the greatest dilution of gastric juice was recorded.[3] In every instance it was desirable to perform the test under conditions which were as constant as possible, and for that reason readings were always made against a dark background. If the tubes were left standing for fifteen minutes or longer it was remarked that solutions of even greater dilution than the one recorded were capable of giving a ring. The importance of immediate examination is therefore insisted on. A second point should be brought out. The stomach should be empty. One of us[4] pointed out elsewhere that even normally a large residue is often found which may in certain pathologic cases assume exaggerated proportions.

In certain experiments (which one of us performed with Drs. Bergeim and Hawk) made in this laboratory, it was remarked that even relatively simple articles of diet such as eggs, combined with cereals and milk, may remain for relatively long periods in the healthy stomach. To commence a test five hours after such a diet will show, even in a certain number of normal individuals, an initial high protein content owing to the dissolved proteins still remaining in the stomach.

Case 23, for instance, demonstrates the results obtained when the test was performed too soon after the individual had ingested a meal of fish and vegetables. In this case the test was purposely performed at that time and the resulting figures show the unmistakable presence of protein residue. *If, therefore, high figures are obtained when the stomach should be empty, in the absence of other factors which we shall point out, an initial very high point is indicative of protein retention.*

Another point is worthy of consideration. The patient is warned to be particularly careful about swallowing oral and bronchial secretions.

An estimation of the protein content of saliva in six normal individuals showed that it gave a reaction in five cases at 1:80 and in one case for some unknown reason at 1:160. These figures can be greatly surpassed in the sputum encountered in certain pulmonary cases, and it is an everyday observation that these individuals swallow much of their sputum.

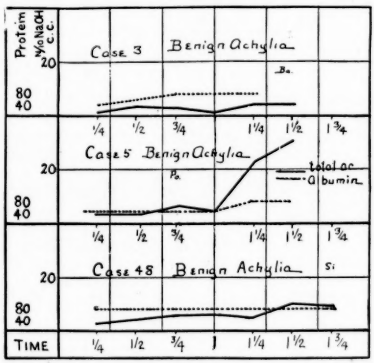


Chart 1.—Total acidity and albumin curves in three cases of benign achylia.

### NATURE OF THE PROTEIN REVEALED BY THIS METHOD

The protein on various occasions found in the gastric juice must come from a variety of sources. Briefly enumerated it may come from food ingested, saliva or bronchial secretions swallowed, bleeding owing to an ulcerative lesion, regurgitation of intestinal contents, and finally *in cases in which there is a gastric lesion, from specific protein products derived from the lesion itself.*

That the pure gastric juice derived from normal individuals contains but little protein must be evident from the fact that on various occasions the juice obtained from normal individuals after the administration of a water meal (a test meal consisting of 200 c.c. of water which is aspirated at intervals) never showed a protein content exceeding 1:40. This is significant inasmuch as it indicates that the pure normal juice has a very low protein content, any increase of which must

* From the Laboratory of Physiological Chemistry of the Jefferson Medical College.

1. Wolff: Magen und Darmkrankheiten, Berlin, 1912, p. 217.

2. These specimens were obtained by means of the fractional tube which one of us (Rehfuss: Am. Jour. Med. Sc., June, 1914, p. 848; New York Med. Jour., Aug. 22, 1914, Rehfuss, Bergeim and Hawk, THE JOURNAL A. M. A., Sept. 12, 1914, p. 909) devised. Specimens were obtained in this way at fifteen-minute intervals, and at five-minute intervals during the first fifteen minutes. One c.c. of the filtered juice was then diluted with 9 c.c. of water representing a dilution of 1:10; 5 c.c. of this mixture was again added to 5 c.c. of distilled water and a dilution of 1:20 obtained; this was again repeated, using 5 c.c. of the mixture last obtained and 5 c.c. of distilled water, and the dilutions were kept up until a series was obtained representing 1:10, 1:20, 1:40; 1:80, 1:160, 1:320, and if necessary 1:640 or more. They were then stratified with approximately 1 c.c. of the Wolff phosphotungstic acid reagent, care being taken that the liquids did not mix.

3. This reagent consists of phosphotungstic acid, 0.3 c.c.; conc. hydrochloric acid, 1.0 c.c.; alcohol, 95 per cent., 20.0 c.c.; distilled water q. s., 100.0 c.c.

4. Rehfuss, Martin E., Bergeim, Olaf, and Hawk, Philip B.: The Question of the Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11.

be of pathologic importance. But the customary Wolff test is performed by administering the ordinary Ewald test-meal and testing at the one-hour interval. Concerning this method we have some data from Wolff,[5] Einstein,[6] and Rolph[7]; the results, however, of testing merely one phase of the digestive curve is obviously wrong. It merely registers a single point in the whole mechanism of gastric digestion and gives no information regarding the elaboration of the protein, a point not without importance.

We therefore made studies (1) to determine if possible the actual content of the test meal and its fluctuation during digestion, and (2) the modification of this curve in normal and pathologic cases. These latter are recorded merely in the hope that a possible interpretation may be obtained for some of the curious phenomena recorded.

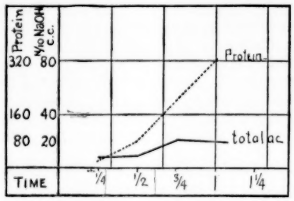


Chart 2.—Protein and total acidity curves in a case of gastric carcinoma.

We found that tea alone gave no reaction even at a dilution of 1:10, and that a regular Ewald meal consisting of 8 ounces of tea and two pieces of toast gave a reaction at 1:20, immediately after thorough maceration. After standing for fifteen hours in the incubator at 38 C. (100.4 F.) a reaction of 1:40 was obtained showing that there was practically no autodigestion. A solution of pepsin without hydrochloric acid gave no protein reaction whatever.

We then performed experiments to study the action of the artificial gastric juice in vitro. The macerated Ewald meal was treated by an artificial gastric juice made by dissolving 0.5 gm. of pepsin in 0.2 per cent. hydrochloric acid. The artificial juice failed to give a reaction at 1:10. This mixture was then put in the incubator at 38 C. and samples were taken at the same time intervals as were employed in taking specimens from the stomach with the fractional tube. The following results were typical of those obtained on three separate occasions:

| | |
|---|---|
| 5 minutes | 1:40 |
| 10 minutes | 1:80 |
| 15 minutes | 1:80 |
| 30 minutes | 1:160 |
| 45 minutes | 1:160 |
| 60 minutes | 1:160 |
| 75 minutes | 1:320 |
| 90 minutes | 1:320 |
| 105 minutes | 1:320 |
| 120 minutes | 1:320 |
| 18 hours | 1:1,080 |

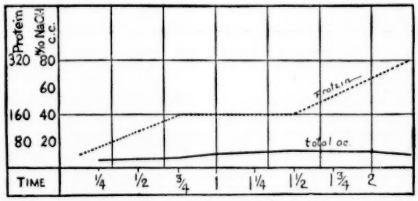


Chart 3.—Protein and total acidity curves in a case of gastric carcinoma.

Therefore we see that using this method we obtain a protein in gradually increasing quantities more or less directly proportional to the strength of the acid and the duration of the reaction and directly dependent on the soluble intermediate protein bodies formed through the action of the artificial gastric juice on the proteins of the bread. In each case there was a gradual rise as the continued action of the gastric juice made itself felt on the bread proteins. *If, therefore, the gastric mucous membrane is absolutely normal and there are no extrinsic sources of albumin, the protein curve should follow the acid curve and in the absence of acid should remain very low.* In other words, depending on the elaboration of acid, there should be a definite elaboration of soluble protein.

### DIAGNOSIS OF CANCER FROM BENIGN ACHYLIA BY THIS METHOD

In an ordinary benign achylia, as seen in Case 5 and in Cases 24, 48 and 49, the albumin curve runs more or less parallel to the acid curve. Even in the subacidities due to benign causes the same rule holds true, and the albumin content remains comparatively low. Smithies,[8] Wolff[5] and others found that figures of 1:100 were suspicious and above this, point out positive evidence of neoplasm, but the actual evolution of the albumin curve was not worked out. We found that *in carcinoma the protein curve diverges from the acid curve, and as digestion progresses this disproportion increases so that there is a marked separation of the curves.* This is seen in the cases recorded (Cases 22, 26, 30 and 27) in which there was practically an achylia and in which in every instance, subsequent events and roentgenoscopy confirmed the diagnosis that the protein curve was entirely disproportionate to the acid curve. Secondly, that this increase in albumin concentration occurred as digestion proceeded suggested that there was an elaboration of protein on the part of the neoplasm per se. In other cases in which the neoplasm was accompanied by a demonstrable acidity, the protein was generally high with a tendency to become higher as digestion proceeded. Protein retention will result in high initial figures, but if the precaution is taken to empty the stomach before testing, this factor is disposed of. In the question of the differential diagnosis between cancer and benign achylia we wish to report two cases of considerable interest, which show how important it is to interpret the findings correctly.

CASE 12.—A man, aged 44, suffering from gastric disturbances for many years, showed in the last few months before admission rather marked anorexia, profound anemia, a tendency to daily vomiting of yellowish material and mucus. He has lost distinctly in weight, and his anemia left him very weak, with paresthesias of the hands and feet. With the exception of intervals of mucus colitis, he has had rather marked constipation. The expectoration, which is pronounced, is free from tubercle bacilli, but contains many staphylococci, *Micrococcus catarrhalis* and a streptococcus. Physical examination as well as roentgenography fail to reveal anything in the lungs except a little thickening of the hilus of the right lung. From the character of the sputum, its persistence and the physical findings, we still thought (with Dr. Beardsley and Dr. Tracey of Beverley, to whom we were indebted for the case) that there must be bronchiectasis. Examination of the blood showed profound

5. Wolff: Berl. klin. Wchnschr., May 29, 1911; March 18, 1912.
6. Einstein: Med. Klin., March 24, 1912.
7. Rolph: Med. Rec., May 10, 1913, p. 848.
8. Smithies: Am. Jour. Med. Sc., May, 1914, p. 713.

## DIGESTION TESTS IN FORTY-NINE CASES OF VARIOUS DISORDERS OF THE GASTRO-INTESTINAL SYSTEM

| Case | | Diagnosis | Results in Minutes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 5 | | | 10 | | | 15 | | | 30 | | | 45 | | | 60 | | | 75 | | | 90 | | | 105 | | | 120 | | | 135 | | |
| | | | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. | Gm. | Tot. Ac. | Free Ac. |
| | | Control: Bread Digestion in vitro | 40 | .... | .... | 80 | .... | .... | 80 | .... | .... | 160 | .... | .... | 160 | .... | .... | 160 | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | .... | .... | .... |
| 1 | Mg. | Atony | 40 | 1.5 | 0.0 | ... | .... | .... | 80 | 4.0 | 0.0 | 160 | 18.0 | 9.0 | 160 | 21.5 | 15.5 | 320 | 40.0 | 27.5 | 80 | 55.5 | 40.5 | 80 | 65.5 | 47.5 | ... | .... | .... | ... | .... | 51.0 | .... | .... | .... |
| 2 | Bk. | Gastroptosis, intestinal adhesions | 10 | 15.5 | 5.5 | 10 | 10.5 | 5.0 | 10 | 9.0 | 4.5 | ... | 15.5 | .... | 160 | 29.5 | 12.0 | ... | 66.0 | .... | 160 | 64.0 | .... | 80 | .... | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 3 | Ba. | Benign achylia | ... | .... | .... | ... | .... | .... | 40 | 1.0 | 0.0 | ... | 3.0 | 0.0 | 80 | 2.5 | 0.0 | ... | 1.0 | 0.0 | 80 | 4.0 | 0.0 | ... | 4.0 | 0.0 | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 4 | Co. | Pulmon. tuberculosis | 320 | 2.4 | 1.8 | 320 | 2.6 | 1.9 | 320 | 13.0 | 10.5 | 160 | 21.0 | 20.0? | ... | .... | .... | 80 | 31.0 | 19.0 | 40 | 32.0 | 20.0 | .... | .... | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 5 | Po. | Benign achylia | 40 | 0.0 | 0.0 | ... | 4.1 | 0.0 | ... | 3.0 | 0.0 | 40 | 3.0 | 0.0 | 40 | 6.0 | 0.0 | 40 | 4.0 | 0.0 | 80 | 23.0 | 0.0 | 80 | 31.0 | Tr. | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 6 | Wa. | Chlorotic ulcer | 80 | 2.0 | 0.0 | 160 | 3.0 | 0.0 | 160 | 4.0 | 0.0 | 80 | 4.5 | 0.0 | 80 | 11.0 | 4.0 | 80 | 20.0 | 8.0 | 80 | 13.1 | 8.2 | 80 | 10.5 | 8.0 | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 7 | Id. | Gastric ulcer? | 160 | 10.5 | 6.0 | 160 | 19.5 | 10.5 | ... | 23.0 | 20.5 | ... | 23.0 | .... | 160 | 43.5 | 30.0 | ... | 47.0 | .... | 320 | 43.0 | 32.0 | ... | 41.0 | 29.0 | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 8 | Co. | Hypersacidity, lead colic | 10 | 2.0 | 0.0 | 40 | 20.0 | 13.0 | 40 | 33.5 | 25.5 | 80 | 53.0 | 44.5 | 160 | 68.5 | 61.0 | 80 | 100.0 | 91.0 | 80 | 102.0 | 85.0 | 40 | 62.0 | 56.0 | 40 | 22.0 | 15.5 | ... | .... | .... | .... | .... | .... |
| 9 | Cha. | Duodenal ulcer | 20 | 11.0 | 4.0 | 40 | 15.0 | 7.0 | 160 | 32.0 | 25.0 | ... | 53.0 | .... | ... | .... | .... | ... | 101.5 | 70.0 | ... | 83.0 | 73.0 | ... | 80.5 | 72.0 | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 10 | Ga. | Atony | ... | 3.0 | 0.0 | 80 | 12.0 | 5.0 | 80 | 15.0 | 6.0 | ... | 47.0 | 32.0 | 80 | .... | .... | ... | 71.0 | .... | ... | .... | .... | ... | .... | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 11 | Ke. | Gastric ulcer | 40 | 18.0 | .... | 160 | 22.5 | .... | 320 | .... | .... | ... | .... | .... | 80 | 45.5 | .... | 40 | 60.5 | .... | 80 | 53.0 | .... | 40 | 37.0 | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 12 | Ka. | Achlorhydria, hemorrhagica gastrica | ... | 1.0 | 0.0 | 20 | 1.0 | 0.0 | 40 | 1.0 | 0.0 | ... | 1.5 | 0.0 | 320 | 4.0 | 0.0 | ... | 4.0 | 0.0 | ... | 5.0 | 0.0 | ... | .... | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 13 | | After treatment | .... | .... | .... | .... | .... | .... | 160 | 11.0 | 0.0 | 160 | 33.0 | 0.0 | 160 | .... | .... | .... | 55.0 | Tr. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 14 | Wt. | Gastric ulcer | 80 | 14.5 | 0.0 | 320 | 19.0 | 0.0 | 320 | 24.6 | 16.0 | 320 | 24.7 | 17.0 | 320 | 34.9 | 19.0 | 320 | 35.0 | 25.0 | 160 | 30.0 | 27.0 | 80 | 30.0 | 20.0 | 80 | 32.0 | 23.0 | ... | .... | .... | .... | .... | .... |
| 15 | De. | Gastric ulcer | 160 | .... | .... | 160 | .... | .... | 160 | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 160 | .... | .... | 160 | .... | .... | .... | .... | .... |
| 16 | Far. | Gastric ulcer | 160 | 19.0 | 11.0 | 160 | 26.0 | 19.5 | 320 | 33.0 | 20.5 | ... | 51.5 | .... | ... | 99.0 | 71.0 | ... | 80.0 | .... | ... | 72.0 | .... | ... | 54.5 | .... | ... | 70.5 | .... | ... | 87.5 | 69.5 | .... | .... | .... |
| 17 | K. | Ptosis, spastic constipation | 40 | 7.0 | 2.0 | 80 | 10.5 | 6.0 | 160 | 22.5 | 16.0 | 160 | 32.0 | 19.5 | ... | 47.0 | 30.0 | ... | 56.0 | 39.5 | ... | 64.0 | 37.0 | 320 | 57.0 | 42.5 | 160 | 53.0 | .... | 80 | 25.0 | 22.5 | .... | .... | .... |
| 18 | K2. | Gastric ulcer | 320 | .... | .... | 320 | .... | .... | 320 | 35.0 | 27.0 | 320 | 36.0 | .... | 320 | 57.5 | 34.0 | 320 | 71.5 | 45.5 | 320 | 88.0 | 68.5 | 160 | 90.0 | .... | 160 | 80.0 | 67.0 | 160 | 76.0 | 67.5 | .... | .... | .... |
| 19 | Sch. | Duodenal ulcer | 20 | 9.0 | 7.0 | 40 | 10.0 | 7.5 | 160 | 29.5 | 17.5 | 320 | 78.5 | 59.0 | 160 | 85.0 | 64.0 | ... | 84.0 | .... | ... | .... | .... | ... | .... | .... | ... | .... | .... | ... | .... | .... | .... | .... | .... |
| 20 | Wal | Chronic gastric ulcer | ... | 4.5 | 3.0 | 160 | 19.5 | 12.0 | 160 | 61.5 | 40.0 | 320 | 62.5 | .... | 320 | 58.0 | 44.0 | 160 | 33.0 | 24.0 | ... | 65.0 | 48.0 | 160 | 54.0 | 44.0 | ... | 50.0 | 43.5 | 160 | .... | .... | .... | .... | .... |
| 21 | Sy. | Chronic catarrh, nephritis | .... | .... | .... | .... | .... | .... | 80 | 3.5 | 0.0 | 160 | 24.3 | 0.0 | 160 | 23.7 | 0.0 | 160 | 31.0 | 0.0 | 160 | 19.2 | 0.0 | 160 | 15.3 | 0.0 | 80 | 21.5 | 0.0 | 80 | 18.5 | 0.0 | 80 | 26.7 | 0.0 |
| 22 | Ch. | Carcinoma | 80 | 4.0 | 0.0 | 80 | 6.0 | 0.0 | 80 | 7.0 | 0.0 | 80 | 9.0 | 0.0 | 160 | 10.0 | 0.0 | 160 | 10.0 | 0.0 | 320 | 19.0 | 0.0 | ... | 20.0 | 0.0 | ... | 22.0 | 0.0 | ... | 6.0 | 0.0 | .... | .... | .... |
| 23 | Gi. | After fish meal | .... | .... | .... | 320 | 59.1 | 21.7 | 320 | 29.4 | 8.7 | ... | 29.1 | .... | 160 | 16.2 | 5.4 | 160 | 25.0 | 5.2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 24 | Mrs.Hi. | Chronic gastritis | .... | 4.0 | 0.0 | 20 | 4.0 | 0.0 | 20 | 5.0 | 0.0 | 20 | 7.0 | 2.0 | 40 | 11.0 | 2.0 | 80 | 29.0 | 6.0 | .... | 30.0 | 2.0 | .... | 6.0 | .... | 40 | .... | .... | .... | .... | .... | .... | .... | .... |
| 25 | Hy. | Cardiac ulcer | 40 | 1.4 | 0.0 | 320 | 20.5 | 0.0 | .... | .... | .... | ... | 43.0 | 9.2 | 320 | 75.0 | 44.3 | 320 | 77.5 | 47.0 | 320 | 80.0 | 59.7 | .... | .... | .... | 320 | 99.0 | 61.4 | .... | .... | .... | .... | .... | .... |
| 26 | Br. | Achylia | 40 | 11.7 | 0.0 | 40 | 13.7 | 0.0 | 40 | 11.1 | 0.0 | 80 | .... | 0.0 | ... | 12.8 | 0.0 | .... | .... | 0.0 | .... | .... | 0.0 | .... | .... | 0.0 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 27 | Al. | Carcinoma | .... | .... | .... | 20 | 4.0 | 0.0 | 20 | 7.0 | 0.0 | 80 | 9.5 | 0.0 | ... | 21.0 | 0.0 | 320 | low | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 28 | Ri. | Nephritis, subacid gastritis | 80 | 13.5 | 0.0 | .... | .... | .... | 160 | 24.3 | 0.0 | 160 | 15.3 | 0.0 | .... | .... | .... | 160 | 22.1 | 0.0 | 160 | 15.2 | 0.0 | 160 | 13.2 | 0.0 | 160 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 29 | Cl. | Gastroptosis, duodenitis | .... | .... | .... | 40 | .... | .... | 40 | .... | .... | 160 | .... | .... | 160 | .... | .... | 320 | .... | .... | 320 | .... | .... | 80 | .... | .... | 160 | .... | .... | 160 | .... | .... | .... | .... | .... |
| 30 | Fa. | Carcinoma of pylorus | .... | .... | .... | 80 | .... | .... | 80 | 9.5 | Tr. | 160 | 13.5 | Tr. | .... | .... | .... | 320 | 38.0 | 27.3 | 640 | .... | .... | 1080 | 64.0 | 30.4 | 1080 | 52.0 | 24.4 | 1080 | 43.6 | 25.6 | .... | .... | .... |
| 31 | Gy. | Stomach adhesions, operation | .... | .... | .... | .... | .... | .... | .... | 40.7 | 18.5 | .... | 47.0 | .... | 320 | 50.3 | 25.6 | 320 | 48.2 | 25.9 | 320 | 43.5 | 25.0 | 320 | 42.7 | 24.3 | 320 | 44.9 | 25.7 | 320 | 48.5 | 28.5 | .... | .... | .... |
| 32 | El. | Pyloric obstruction, benign | .... | .... | .... | .... | .... | .... | 320 | 43.2 | 27.2 | 320 | 62.1 | 28.8 | 320 | 69.3 | 31.5 | 320 | 82.7 | 29.8 | 320 | 89.0 | 47.7 | 320 | 85.5 | 51.3 | 320 | 86.0 | 41.0 | 320 | 82.0 | 40.0 | .... | .... | .... |
| 33 | Ca. | Probable carcinoma | 40 | 10.5 | 4.3 | 40 | 9.0 | 6.0 | 40 | 12.9 | 11.5 | 80 | 14.1 | 9.3 | 160 | 26.9 | 13.0 | 320 | 42.2 | 21.0 | 320 | 46.5 | 22.0 | 320 | 58.5 | 23.5 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 34 | McE. | Duodenal ulcer | 160 | 23.0 | 17.7 | 320 | 42.0 | 14.5 | 640 | 60.5 | 19.5 | 640 | 96.5 | 42.5 | 320 | 118.5 | 57.5 | .... | 90.0 | 62.3 | .... | 56.0 | 18.5 | hypersecretion | | | hypersecretion | | | hypersecretion | | | .... | .... | .... |
| 35 | Du. | Infected gastritis purpura | 20 | 5.5 | 0.0 | .... | .... | .... | .... | 7.5 | 0.0 | 80 | 7.0 | 0.0 | 80 | 8.0 | 0.0 | 160 | 11.0 | 0.0 | 320 | 14.1 | 0.0 | 640 | 11.9 | 0.0 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 36 | Pb. | Duod. ulcer with probable adhesions | 80 | 16.8 | 10.2 | 160 | 21.8 | 9.0 | 320 | 23.0 | 9.3 | ... | 27.3 | 12.2 | ... | 22.4 | 10.0 | .... | .... | .... | .... | 35.5 | 21.0 | .... | .... | .... | 160 | 53.4 | 34.5 | 160 | 42.4 | 25.7 | 320 | 72.5 | 46.6 |
| 37 | Fo. | Susp. but Neg. Gas. Carcin. | 80 | 12.5 | 6.0 | 160 | .... | .... | 160 | 17.7 | 7.0 | 160 | 25.3 | 18.5 | 160 | 36.3 | 14.7 | 160 | 31.4 | 17.3 | .... | .... | .... | 160 | 33.5 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 38 | McF. | Catarrhal jaundice | .... | .... | .... | 80 | 20.0 | 17.5 | 160 | 23.5 | 17.0 | 320 | 48.0 | 36.5 | 320 | 67.0 | 58.5 | 640 | 70.0 | 61.0 | 160 | 53.5 | 50.5 | 160 | 50.0 | 42.0 | 80 | 31.5 | 22.0 | .... | .... | .... | .... | .... | .... |
| 39 | Ha. | Duodenal ulcer | .... | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 160 | .... | .... | 160 | .... | .... | 160 | .... | .... | 160 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 40 | Wx. | Adhesions | .... | .... | .... | .... | 61.0 | 27.5 | ... | 76.5 | 14.1 | 160 | 69.7 | 55.4 | 160 | 51.2 | 40.0 | 160 | 61.4 | 50.0 | 320 | 70.8 | 55.0 | 320 | 83.8 | 67.8 | .... | .... | .... | ... | 27.2 | .... | .... | .... | .... |
| 41 | Bl. | Ulcer, carcinoma | 160 | 4.5 | 0.0 | 160 | 6.0 | 0.0 | 320 | 12.0 | 0.0 | 640 | 58.3 | 18.5 | .... | .... | .... | 320 | 73.7 | 50.2 | 320 | 95.8 | 72.1 | 320 | 95.0 | 75.7 | 320 | 68.0 | 49.5 | ... | 77.0 | .... | 320 | 48.8 | 32.2 |
| 42 | Lo. | Hyperacid gastritis | 80 | .... | .... | 160 | .... | .... | 640 | .... | .... | 640 | .... | .... | 640 | .... | .... | .... | .... | .... | 320 | .... | .... | 320 | .... | .... | 320 | .... | .... | 160 | .... | .... | 160 | .... | .... |
| 43 | Bs. | No diagnosis | 80 | 1.0 | 2.0 | .... | .... | .... | 320 | 30.0 | 8.7 | 320 | 27.8 | 9.1 | 640 | 41.2 | 14.7 | 640 | 40.0 | 11.5 | .... | .... | .... | .... | .... | .... | 320 | .... | .... | ... | 33.0 | 13.5 | .... | .... | .... |
| 44 | Rg. | Susp. Carcin., not proved | .... | 30.2 | 9.4 | .... | .... | .... | 320 | 42.8 | 19.7 | 320 | 53.6 | 16.5 | 320 | 51.2 | 20.4 | 320 | 51.0 | 21.6 | 320 | 43.2 | 17.2 | .... | .... | .... | 320 | 41.0 | 20.3 | 320 | 47.0 | 22.9 | .... | .... | .... |
| 45 | St. | Cholelithiasis? | 160 | 28.2 | 13.2 | .... | .... | .... | 160 | 23.8 | 13.2 | ... | 37.5 | 19.1 | ... | 52.5 | 26.3 | 320 | 47.3 | 30.0 | ... | 41.7 | 28.6 | 160 | 26.5 | 14.2 | 320 | 48.0 | 27.4 | 320 | 49.0 | 27.0 | .... | .... | .... |
| 46 | Pr. | Duodenal ulcer | .... | .... | .... | 20 | 4.0 | 0.0 | 20 | 6.8 | 0.0 | 160 | 39.7 | 21.6 | 160 | 54.9 | 38.0 | .... | .... | .... | .... | 87.0 | .... | .... | 81.3 | 59.3 | 40 | 79.0 | 50.0 | 40 | .... | .... | .... | .... | .... |
| 47 | Ka. | Carcinoma | .... | .... | .... | 40 | 2.0 | 0.0 | ... | 5.0 | 0.0 | .... | .... | .... | ... | 7.0 | 0.0 | .... | 9.0 | 0.0 | .... | .... | .... | 160 | 14.8 | 0.0 | .... | .... | .... | ... | 12.9 | 0.0 | 320 | 10.0 | 0.0 |
| 48 | Si. | Pericholecystitis | .... | .... | .... | .... | .... | .... | 80 | .... | .... | .... | .... | .... | 80 | .... | .... | 80 | .... | .... | .... | .... | .... | 40 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| 49 | Ba. | Benign achylia | .... | .... | .... | .... | .... | .... | 40 | .... | .... | .... | .... | .... | 80 | .... | .... | 80 | .... | .... | .... | .... | .... | 80 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |

anemia, but none of the true findings of pernicious anemia. An analysis of the gastric juice showed a total achylia persisting throughout the entire digestive cycle and absolutely no ferment response, occult blood positive, many smaller micro-organisms, but no lactic acid and no Oppler-Boas bacilli. The protein result is shown in No. 12 in the table. The sudden jump was synchronous with the appearance of bleeding and therefore was not due to the elaboration of the protein through a specific neoplasm, but to the protein in the blood exuded. Two things decided us against the diagnosis of neoplasm—first, the long duration of the case; secondly, the absence of any Roentgen-ray or palpatory evidence in the face of such a pronounced gastric finding. The case, which will be reported, is of the greatest interest. Suffice it to say, that by means of intragastric, dietetic and certain internal glandular medication, there was steady improvement with a disappearance of the gastric symptoms. A vaccine was made for the expectoration, and at this writing, after the fifth administration of the vaccine, the expectoration has disappeared, and the patient is 3 pounds over his best weight.

This case demonstrates forcibly the danger of taking the protein content at a given point and deciding for or against carcinoma of the stomach. Case 35 is similar, a direct infection of the stomach in a subject with purpura hemorrhagica, in which the presence of blood has caused a marked increase in the protein content. But in carcinoma, *the protein continues to increase until the end of digestion.* Case 22 is one in which there was a large inoperable carcinoma in the wall of the stomach. Case 27 is a similar case showing a gradual, steady and exaggerated rise in protein content. Case 30 shows to what extent this might go in carcinoma of the pylorus. In this case the retention liquid in the empty stomach was filled with a purée of leukocytes amounting to diluted pus; this was undoubtedly due to the ulceration of the neoplasm.

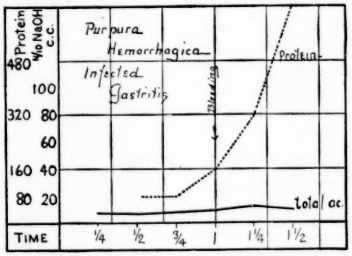


Chart 4.—Protein and total acidity curves in a case of purpura hemorrhagica.

### DIAGNOSTIC VALUE OF THE PROTEIN CONTENT IN ULCERATIVE CONDITIONS OF THE STOMACH

We made a series of protein determinations on cases of clinically diagnosable ulcer, all of which had been submitted to careful physical examination and in most cases, roentgenoscopy. We found an altogether unusual protein curve in these cases, namely, a rapid rise in the protein concentration out of all proportion to the protein elaborated by the action of any juice in this period of time, arguing, therefore, for an extrinsic cause for the protein. This is to be seen in practically all cases on this list in which the diagnosis of ulcer was made, and the type of the protein curve in contrast to the acid curve is striking. Case 6 shows the very early initial rise. This was an undoubted case of gastric ulcer, showing the characteristic tender point, pain, and occult blood in both gastric contents and feces, and marked secondary anemia. The presence of the occult blood may be the cause for the phenomenon. In Case 8, which several clinicians thought one of gastric ulcer, the absence of characteristic symptoms, the absence of the minutest traces of bleeding, and the character of the curve enabled us to rule out ulcer. This was justified by the subsequent course of the case. Case 11, although the data are not complete, is in all probability one of ulcer, there being occult blood at times in the movements on a meat-free diet. Case 14 shows the recurrent pain, characteristic tender point, slight tendency to rigidity of the upper right rectus, persistent history of ulcer, and alimentary hypersecretion. Case 15 shows the persistently high protein content from a case of bleeding ulcer. The history is of long duration, characteristic pain, hematemesis, tender point, occult blood in the gastric contents and stools, and the early symptoms of gastric retention. Hypersecretion followed the meal and was pronounced. This liquid, which was found free from food residues, showed a protein content of 1:160, entirely different from the normal gastric juice. This was salted out with ammonium sulphate and filtered, and the albumin content dropped to 1:40, suggesting very strongly serum albumin probably derived from blood, as the cause of the high content. Case 16 was a typical case of ulcer with two severe attacks of hematemesis very large in amount, characteristic pain, both alimentary and continued hypersecretion, a tender point, and profound anemia from hemorrhage. Case 18 is one of pyloric ulcer with obstruction and retention, showing the very high point from the very first sample, undoubtedly due to protein retention. Cases 9 and 19 were cases of duodenal ulcer. Case 20 alone was puzzling, characteristic ulcer symptoms alternating with periods of relief. The case was most likely ulcer, high acid figures and hypersecretion playing an important part, although the evidence here renders the diagnosis uncertain. These cases are merely presented as showing a striking protein curve in cases of ulcer. Whether this is a constant finding, we are not prepared to state. We merely wish to submit these results for further investigation, believing that the high protein curve which does not occur in ordinary cases suggests the possibility of ulcer. As to the cause of this rise, whether it is due to bleeding, or hypothetically to exudation of protein products from the ulcer region, or to the action of the corrosive juice on the ulcer, we cannot say. Some further results seem to show that while the high protein content remains sustained in gastric ulcer, in duodenal ulcer there is an initial rise which apparently falls off more rapidly, possibly owing to the hypermotility encountered in a certain proportion of the cases of the latter disease. As yet we have insufficient data to make a definite statement, but in those cases in which the diagnosis was made the rise of the curve to its high point was slower.

### METHOD OF INTERPRETATION OF THE RESULTS OF THE REACTION

In interpreting any protein curve, the question arises as to the quantity and source of the protein. We have pointed out that, normally, in the absence of any extrinsic factor, the quantity of dissolved protein runs more or less parallel to the duration of time in the stomach and the acidity. Any marked deviation must

V. 19

therefore be accounted for. On the basis of this finding rests the value of the test for diagnostic purposes. If the protein curve simply follows the acid curve, it merely represents the action of the gastric juice on the bread ingested, and may be taken as an index of gastric function. This is already given in the acid curve. But abnormal or pathologic possibilities exaggerate the curve out of all proportion to the acid curve, either in the very beginning, during, or at the termination of the curve. Therefore, if bread alone can only give us a definite amount of protein within a definite time, an exaggerated quantity or the presence of high figures must mean that the protein comes from other sources than bread. In the present work, the separation and recognition of the different forms of protein has not seemed practical for routine work. The method of interpretation has been based on a comparison of the acid and protein curves. It is therefore perfectly evident that a certain protein concentration in a given time can be produced from a standard meal. What are the extrinsic sources of protein? These may be (1) blood; (2) the presence of pus either intragastric in origin or swallowed; (3) the end-products of protein digestion still in the stomach through atony or obstruction; therefore stasis, lack of motor tone or actual obstruction may unduly increase the protein concentration, all of which are removed by emptying the stomach before administering the meal; (4) a possible exudation of lymph or serum from ulcer; (5) the exudation from a malignant lesion. These factors should be borne in mind in interpreting the findings. In Cases 2, 8, 1, 10, 13, the findings indicated the absence of ulceration, and the subsequent course of the cases demonstrated the correctness of our diagnosis. In Case 14 the curve indicated strongly the presence of ulcer which would cover all the symptoms of the case. In Case 24, the diagnosis of neoplasm was definitely eliminated on that finding and subsequent events justified the diagnosis. In Case 27, it is evident that an achylia could not produce such a curve unless an added factor such as the ulceration of a neoplasm came into play. In conclusion, we may state that while we do not claim any pathognomonic value for the test, we do believe that it will add another link to the chain of evidence which may decide for or against a given diagnosis.

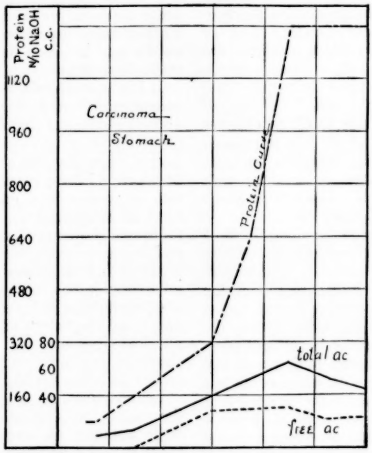


Chart 5.—Protein, total acidity and free acid curves in case of gastric carcinoma.

## CONCLUSIONS

1. The gastric juice in health shows definitely a protein content of very low degree.

2. This content is increased in disease by the addition of an exudation of protein material from inflammatory, ulcerous, or carcinomatous mucous membranes, or by the addition of partially digested and retained food residues, or the swallowing of protein material such as certain forms of sputum.

3. Bread and tea alone, following the composition of the Ewald meal, will show in the absence of any pathologic factor a definite amount of protein corresponding to the curve or the digestive power of the juice secreted. A mixture or maceration of bread in tea will show a protein content on 1:20-1:40; if the mixture is acted on by an artificial gastric juice in vitro the protein content of the juice rises steadily within the next two hours and may reach 1:320 in seventy-five minutes. In other words, there is a transformation and liberation of soluble protein which may be demonstrated by the Wolff technic.

4. The pathologic significance arises when a curve shows any marked deviation from this recognized standard, that is to say, when there is an undue concentration of protein out of all proportion to that normally found at that particular phase in digestion. *If therefore a marked increase in protein does not conform in a general way to the acid curve it can be definitely stated that the protein is coming from other sources than the proteins of the bread.*

5. An analysis of the protein would seem to demonstrate that normally it is of the nature of a proteose, but in inflammatory or ulcerative conditions it is probably serum protein removed to a large extent by saturation with ammonium sulphate.

6. We could call attention to the interesting curves found in ulcer, many of which showed traces of blood, several of which can be explained on the basis of protein retention, some of which must be explained on the basis of hypothetic exudation.

7. In the differentiation of achylia and carcinoma, we pointed out that the test was of value in direct proportion as the case approached a true achylia and the added factors (extrinsic) such as swallowed pus, bleeding and protein residues could be ruled out. We likewise pointed out that the one-hour point was insufficient for examination and that the characteristic for carcinoma in these cases is a divergence of the protein curve out of all proportion to the acid curve. Infected catarrh, hemorrhagic erosions, achlorhydria, hemorrhagica gastrica, may give high findings, but they do not have the tendency to give a steadily increasing protein content.

8. We believe that a study of the protein curve may yield information of the greatest value, provided that all the precautions have been observed.

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**Spring Tonics.**—The idea that a "tonic" is needed in the springtime is a mere tradition. Most of such tonics sold to the public are strongly alcoholic, and may prove distinctly harmful.—Health Letter, Life Extension Institute.

# THE DIAGNOSIS AND TREATMENT OF INFECTIOUS ENDOCARDITIS

GEORGE E. EBRIGHT, M.D.
SAN FRANCISCO

Since the researches of Poynton and Paine about fifteen years ago which resulted in the isolation of an infectious agent of acute rheumatism, much has been accomplished to elucidate the etiology of infections of the endocardium. Particular interest attaches to the work of Billings, who in 1909 isolated what appeared to be an attenuated pneumococcus in slow endocarditis. Schottmüller,[1] in March, 1910, gave the name of endocarditis lenta to a group of cases which appear to be the same as those described the year before by Billings as due to an organism to which he gave the name of *Streptococcus viridans* on account of its growing with a greenish color on agar. Publications by Libman and Cellar in March of the same year added further interest to this type of endocarditis and it remained for Rosenow[2] to harmonize the bacteriology of the subject by demonstrating that by varying the oxygen pressure in culture mediums the organisms which are frequently the cause of arthritis and endocarditis may be changed culturally and morphologically from one to the other. Rosenow[3] describes three strains of organisms which he changes one from the other, each of which has a marked affinity for certain structures, one hemolytic streptococcus with affinity for the joints, *S. viridans* with affinity for the heart valves, and *S. rheumaticus* which again has a predilection for the joints.

Weight of authority now compels the recognition of that form of chronic infectious endocarditis due to the viridans group as a distinct entity of which there are three types.[4] First, that in which patients develop nephritis and die of uremia. Secondly, that in which is recognized chronic endocarditis with fever, the patients having large valvular lesions, occasional petechiae of the skin and other embolisms, joint symptoms, more or less anemia with a pale skin or more or less pigmentation. Thirdly, that in which the striking feature is a diffuse brown, sometimes quite dark color of the face and some pigmentation on the rest of the body, with more or less anemia, usually palpable spleen and tenderness of the sternum. Baehr[5] describes as characteristic of endocarditis lenta, lesions of the kidney due to septic emboli giving a distinct pathologic picture.

In addition to the viridans group other bacteria may cause endocarditis. Staphylococcus infections[6] may be usually traced to some skin infection —furuncles or felon or some injury to the mucosa as in catheter fever; suppurative metastases are common. Pneumococcus endocarditis may occur with pneumonia; gonorrheal endocarditis is not uncommon. Endocarditis due to influenza has been described by McPhedran[6] and others. Endocarditis may be caused by the meningococcus as a primary lesion. Nankivell[8] describes a case in which he isolated a diplococcus not elsewhere described as a cause of endocarditis. A capsulated Gram-staining diplococcus occurring in chains was isolated by W. H. Smith.[9] Lamb and Paton[10] reported a case of vegetative endocarditis caused by a spirillum. It is to be observed that children under 4 years of age are apparently immune to chronic infectious endocarditis.[11]

Endocarditis may be secondary to articular rheumatism, tonsillitis, pyorrhea, septic endometritis, pyogenic inflammation of the skin and mucous membranes. Experimental appendicitis having been produced with the Poynton and Paine organism would make it appear possible that appendiceal inflammations may figure as a precursor to endocarditis. Endocarditis may follow an acute gastro-intestinal infection. It is, however, difficult in some cases to say whether the cardiac inflammation is secondary to enteritis or whether the abdominal symptoms are not purely toxic in nature from a primary endocardial invasion. There remain further many instances of acute endocarditis in which no discernible lesion has preceded the involvement of the endocardium.

It has been shown in the chronic infectious type of endocarditis[12] that the beginning lesions are subendothelial bacterial embolisms. The valve leaflets being relatively poor in vascularity, the bacteria may grow faster than the leukocytes are able to cause their destruction; there results hemorrhage and the formation of vegetations going on to ulceration. There must be recognized the possibility of resolution before the stage of advanced vegetation formation is reached, as Libman described hearts in which there may be seen areas of active inflammation with other areas where inflammation has subsided with resulting scars. There is no doubt that in fortunate instances, such an inflammation of the valves as may give rise to very definite physical signs may still recover without such scars as result in the impairment of the valve function and, sooner or later, cardiac decompensation.

Leukocytosis, as a rule, will not be found before the stage of ulceration and may not be present when large numbers of bacteria are in the blood.[13] While there may be sufficient inflammation to cause fever and sufficient symptoms to render the patient ill and sufficient endocardial change to give rise to definite physical findings, there may still not be great enough intoxication to call forth a leukocytosis.[13]

It is to be recognized that simple endocarditis differs only in degree from malignant endocarditis, both being of an infectious nature, and that a mild endocarditis may of course become malignant. When such a series of hearts is considered as those which Libman demonstrated in which healing of quite considerable endocardial inflammation has taken place, much encouragement is afforded in the treatment of rather well-marked cardiac inflammations, in which, however, ulceration has not yet taken place nor can bacteria be demonstrated in the blood stream. The following cases are illustrations in point.

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CASE 1.—A previously healthy child, 7 years old, of good family history, complained on the completion of a transcontinental journey, of a slight fever and indisposition. She was seen first two days later after the fever had disappeared, the child not having regained her wonted spirits. On examination she appeared rather pale and apathetic. Physical examination showed normal conditions except the heart; its action was forcible and rapid, pulse rate 120 a minute, regular, no cardiac enlargement, left margin extending to the left of the nipple line. There was a soft systolic murmur with the sound at the apex, and a soft systolic murmur at the pulmonic area. The throat, skin, mucous membranes and joints were normal, leukocytes 4,000, red cells 5,000,000, the urine was normal, no red cells.

The following day the heart had dilated so that the left margin was 1½ inches outside the left nipple line, the pulse rate had dropped from 120 to 82 a minute with marked irregularity due apparently to extraventricular systoles. Every second, third, fourth, fifth, eighth and tenth successive impulse the beat would be missed at the wrist, the average being a dropped beat for every fourth impulse. This irregularity continued with gradual improvement so that by the end of the next forty-eight hours the left margin of the heart was only ¼ inch outside the left nipple line and the pulse at times was regular. By the end of four weeks with gradual improvement the pulse was practically regular. During the next two weeks, however, skipped beats occurred about half the time. During the fifth week irregularity occurred again, the average being five beats dropped in a minute, then regular again for three weeks when an average of six beats was dropped in a minute during the course of one day. Again a period of regularity for a week when two days occurred in which from four to six beats would be dropped in a minute at times. From then on until the end of the seventh month the pulse remained regular. The temperature throughout showed physiologic variations; cardiac murmurs varied more or less from time to time depending largely on nervous influences. The patient was kept rigidly horizontal in bed. The pulse rate for the first three weeks was rather low, that is between 68 and 100, after averaging about 100 a minute, ranging from 80 to 110, but as a rule in the neighborhood of from 100 to 104.

Convalescence was otherwise uneventful except that about a week after the onset of the illness a sudden pain in the calf of one leg suggested an embolus; this, however, subsided and there were no further embolic symptoms; by the end of seven months the heart was normal in size; that is, just at the nipple line or within it, the heart sounds perfectly clear and the rate regular. The child was kept in a horizontal position as quiet as possible for five months. During that time there were systolic murmurs heard at the pulmonic and mitral areas, the pulmonic murmur persisting much longer than the mitral. For many weeks a little excitement or exertion caused a reappearance of the mitral bruit. At the end of the fifth month, the heart being normal in size and the mitral sound being clear, she was allowed to sit up in bed five minutes; the following day there was some dilatation and increase of the murmurs. These disappeared in the course of a day or two. At the end of the month she was sitting up in bed two hours a day with rubs and passive exercises. Between the latter part of the fourth and sixth months, the murmur to the left of the sternum in the second interspace, heard when the patient was in a horizontal position, disappeared if she were held in a sitting posture.

General massage was instituted when the heart had been found normal in size for about two weeks and the mitral sound showed a tendency to be pure. With each progressive step, whether massage or passive movement or sitting up in bed, the heart displayed marked irregularity so that these changes were made in very slow stages before the patient was allowed to sit unassisted even for a few minutes. She was held in an upright position as a test of the myocardial function and was not allowed to support herself until this maneuver was not followed by irregularity or too rapid pulse. At the end of the seventh month she was allowed every liberty except standing. The heart was normal in size and all the sounds pure. She was then allowed to go to the seashore for three weeks but not allowed to walk.

With the beginning of the eighth month a few were permitted, which resulted after three or four days in a rather severe dilatation of the left ventricle. This was associated with systolic and pulmonic murmurs and an occasional slight irregularity in the shape of a lengthened diastole. The heart recovered after a few days in the horizontal position. There was no further cardiac trouble and the patient's heart remains at present, after an interval of two years, without any perceptible hypertrophy, with perfectly normal valve sounds, and the child is without the necessity of restriction in her activities which are those of a normal active girl. The diagnosis in this case rested on fever, rapid heart action followed by rather acute dilatation and irregularity, together with murmurs that changed from time to time and very marked muscular irritability.

CASE 2.—Acute endocarditis with aortic and mitral valvulitis in a boy, aged 14. On July 26, 1910, the patient complained of two large boils on his abdomen which had been untreated for some days and were exuding a large amount of rather thin pus. He did not complain of his heart, but on examination the left margin was found to be slightly outside the left nipple line. There was a systolic thrill felt at the fourth interspace over the heart, sharp accentuation of the pulmonic sound, soft aortic murmurs to the right of the sternum heard also in the left second interspace and a distinct systolic mitral valvular murmur. Subsequently these adventitious sounds varied in intensity. The pulse dropped two or three beats a minute, rate at first 86 to 90 a minute, leukocytes 7,400, temperature 98.4 to 99 F. During the course of the illness there was no evidence of emboli either in the skin, joints or kidneys.

During the second week there was a very questionable pericardial rub. The spleen was unchanged upward being, at the upper border of the ninth rib, not palpable. This patient was kept in bed until the murmurs disappeared and irregularity of the heart ceased. It was not until twelve months later, and two or three weeks after he was permitted to be on his feet, that he was allowed to walk down stairs. During that time his illness was very similar to that of the patient in Case 1; he had been allowed to sit up in bed as soon as the heart was normal in size and murmurs were absent. Passive exercise and massage were employed and exercise was allowed as soon as possible. With the advent of each new procedure whether massage, passive movements or sitting position, the heart became enlarged and missed beats and murmurs reappeared. He was not allowed to stand for long until none of these things happened, with the result that not only have the heart sounds remained normal but in particular there is no ventricular hypertrophy. At present, four years later, the patient is in perfect health. His life so far as violent exercise was concerned was restricted for a year, but aside from that has been allowed every liberty including the usual collegiate activities, and during his vacations has become an expert cowboy on a cattle ranch.

CASE 3.—Acute endocarditis with mitral valvulitis in a girl aged 7½. The mother had died of infectious endocarditis. Child's previous health had been normal. The onset of illness consisted of loss of appetite and slight malaise. Physical examination showed the left heart dilated, pulse regular, rate 110, no fever, but a distinct systolic murmur at the pulmonic and mitral areas. The murmurs varied during the next few months, the mitral murmur gradually diminished until it finally disappeared; pulmonic murmurs persisted about ten months. The heart was normal in size in three or four weeks. The patient's recovery was complete in ten months of which eight were spent in bed. Two months later she was allowed to return to school, the heart being normal in size, pulse regular, valve sounds perfectly pure. In this case there was no leukocytosis, no evident emboli. Normal health has been maintained for three years, during which time there have been no restrictions on her activities. There is no evidence of hypertrophy of the heart.

In these three cases there was at no time leukocytosis; a blood culture was made several times in the instance of the boy, with negative results, and in none was there more than a very slight fever; the pulse was variable. With the onset of the inflammation it is interesting to observe that there was tachycardia in one case for a day before dilatation occurred. Dilatation of the ventricle occurred suddenly and was associated with a slow intermittent pulse.

In the matter of treatment, the ultimate result to be expected in any case would depend largely on the degree and virulence of the inflammatory processes. It is advisable to reduce the work of the heart to a minimum by means of absolute rest, regulation of diet with a view to preventing distention of the stomach and colon and eliminating as much as possible a rise of blood pressure by the avoidance of hearty meals, use of the ice-bag, etc. The matter of rest is the most important of all. In fortunate cases this will result in a short time in diminution of the cardiac dilatation and will bring about conditions that most favor the subsidence of the inflammation. It is to be borne in mind that rest must be carried out with the utmost rigidity and the patient left as much as possible to the care of a suitable nurse. It is seldom desirable to separate a child from its parents, but the fewer people that enter the room the better. During the stage when inflammation is still present passive movements and massage have no place in the treatment. These measures, however, are of benefit when it is felt that the inflammatory process has disappeared and the myocardial irritability has sufficiently subsided.

The great aim in the treatment of such mild cases as here detailed is to prevent the increase of cardiac inflammation to such a point that there is the full painted picture of infectious endocarditis with its hopeless prognosis, and also to obtain a recovery before inflammation of a valve has gone to the point of such destruction as will result in scars of the valve segments and sooner or later a cardiac cripple. To that end it must be insisted on that the patient remain in bed a sufficient length of time, and a safe minimum is three months. Broadbent points out that a child with endocarditis dies, as a rule, before it attains adult life, especially if it does not receive that care which insures a complete subsidence of the inflammation, which may smolder for months, and a return of the heart to its normal size, also until the myocardium has lost its abnormal irritability and has regained such a sufficient margin of reserve strength as will prevent dilatation on slight provocation and will enable it to bear the burdens that a careless person may impose on it. Experience seems to teach that in adults acute endocarditis complicating inflammatory rheumatism is in many instances a very benign disease, recovery taking place in a much shorter time than is the rule with children. Valves already injured by previous inflammations present greater obstacles to a cure than inflammations occurring for the first time.

The use of vaccines is not unattended with danger.[14] In the first place the patient is already generating toxins theoretically sufficient without the addition of artificial vaccines. Again, when large numbers of bacteria are found in the blood, the use of vaccines may be attended with a reduction of the number of bacteria by destruction, but there are liberated at the same time toxins which result in an increase of the leukocytes and fever and a lowering of the condition of the patient. The same thing results in the use of foreign serums. It appears that the invading organism immunizes itself against the antibodies in the blood of the patient so that when foreign serum is introduced, although the number of bacteria may be diminished, the net result for the patient is bad. The use of cardiac stimulants is unnecessary so long as the proper amount of cardiac work is being performed, and it would seem rather advisable as long as possible to avoid stimulating the myocardium, already more or less degenerated from bacterial poisons, as the great desideratum is cardiac rest, not work. It is not to be denied that the use of small doses of digitalis may become necessary, but it will be observed that the heart muscle in endocarditis is very susceptible to the action of stimulants and even small doses of digitalis, for instance, may produce an irregularity before not present and which disappears on the cessation of the drug. Not only that, but in the presence of vegetations stimulation may cause a dislodgment and troublesome embolus.

209 Post Street.

14. Billings, Frank: Chronic Infectious Endocarditis, Arch. Int. Med., November, 1909, p. 409. See also Note 13.

## INTESTINAL OBSTRUCTION DUE TO SIGMOID VOLVULUS

### WITH REPORT OF A CASE OCCURRING IN A CHILD

ALEXIUS McGLANNAN, M.D.
BALTIMORE

In December, 1912, I reported a study of 191 cases of intestinal obstruction, exclusive of external hernia.[1] This series included 8 cases of sigmoid volvulus, all occurring in adult patients. Since that time I have added to the original group the records of 66 cases of intestinal obstruction, making the present number 257. Among the new cases is one of sigmoid volvulus occurring in a child of 6 years, which is herewith reported.

Acute obstruction is much more common in the small than in the large intestine, 201 to 56 being the proportion in this series. Volvulus of the sigmoid occurred 10 times in the series, making about 18 per cent. of the large intestine cases, and 3.8 per cent. of all forms of obstruction. Volvulus of the small intestine occurred 11 times, twice in children. Of the 257 cases, 41 occurred in children under 12. Eighteen of these cases were ileocecal intussusception, and 6 intussusception of the small intestine proper. Intussusception therefore makes up more than half of all the cases occurring in children, and is 8 times as common as all forms of volvulus in this class of patients.

Volvulus of the sigmoid occurring in a child is an unusual form of obstruction. As is usual when the obstructing agent interferes with the circulation in the mesentery the symptoms are severe and toxemia develops very rapidly after the onset of the obstruction. Therefore the passage from the first to the third or terminal stage of the disease may require but a few hours of illness.

A true volvulus of the sigmoid is probably impossible unless this portion of the colon is redundant. In all the cases studied this enlarged sigmoid is noted. The normal contour and close position of the footpoints of the sigmoid make a mechanical arrangement

1. McGlannan, Alexius: Intestinal Obstruction, THE JOURNAL A. M. A., March 8, 1913, p. 733.

especially favorable for the development of a twist when this loop of bowel is elongated. The feces collect in the loop, becoming more and more hardened as the constipation increases. Strong purgatives are usually administered to relieve this condition, and the resulting vigorous peristaltic movements forcing the contents of the distended loop of bowel against the fixed lower foot-point jam this outlet. Persistence of the force from above first makes the loop spastic and distended, and then sends the upper free portion in a spiral direction around the descending fixed portion.

Constipation is not necessarily a forerunner of volvulus. Any violent peristaltic action may cause the spastic contraction and the twisting movement of the long sigmoid loop.

The symptom of onset in sigmoid volvulus is abdominal pain, usually severe paroxysmal cramps, with or without previous constipation. Tenesmus with an inability to pass anything by rectum, except perhaps a little mucus, is often a secondary symptom. Blood may be present in the material expelled but the quantity is small and this sign is not at all frequently observed — a point of difference between the symptoms of volvulus and those of intussusception. An enema may be effectual, but if this does not relieve the pain or the nausea and vomiting which come on in a few hours after the onset, operation is indicated. The enema should be given through a long tube and with the patient in the knee-chest position.

The leukocytes are rapidly increased in number, reaching 25,000 or more in a few hours. In the 8 cases in adults studied the average was 23,000, the extremes 13,000 and 40,000. In the case occurring in a child the leukocyte count was 41,500.

Later on there will be distention with visible peristalsis, a palpable spastic coil in the lower abdomen, and then toxemia.

Operation should be performed in the early period of the obstruction, when it is safe to remove the redundant sigmoid and in this way prevent recurrent attacks. Simple relief of the volvulus is very likely to be followed by a recurrent obstruction. In one case of this series the patient had 32 attacks of obstruction and 3 laparotomies before his giant sigmoid was removed and a permanent cure effected.

The history of the case occurring in a child is the following:

The patient, a white girl, aged 6, was admitted to the children's ward of Mercy Hospital and examined in consultation with Dr. Edgar Friedenwald, who had at once recognized the acute surgical abdomen. The history was of two days' illness, the onset with cramps and diarrhea, followed by vomiting and tenesmus. No blood was in the movements. The patient was an anemic child, toxic, extremely listless, pulse rapid and thin; respirations thoracic and shallow. The abdomen was generally distended and tender. Muscle spasm and rigidity most marked in right lower quadrant. Dulness in both flanks. White blood count, 41,500, polynuclears 91 per cent.

Operation was performed immediately under novocain infiltration and ether anesthesia. A long right rectus incision was made. When the peritoneum was opened a large quantity of straw-colored fluid poured out. The small and large intestines were distended, but not inflamed. A hasty exploration of the right iliac fossa showed a healthy appendix and a greatly distended cecum. A much dilated loop of large bowel extended from the left over into the right lower abdomen. This loop was followed into the left fossa and proved to be the fundus of a sigmoid volvulus, which had twisted on its foot-points through an arc of about 300 degrees. This was untwisted, and a rectal tube passed through the anus by an assistant was guided by a hand in the abdomen up into the dilated loop. There was an immediate expulsion of gas and watery feces through the tube, with relief of the distention of the bowel. The abdomen was closed in layers, using fine silk sutures. The stomach was washed out and an ounce of castor oil given through the tube. Five hundred c.c. of salt solution and one dose of 1/200 grain atropin were given subcutaneously.

The patient was quite toxic for the first twenty-four hours after the operation and lavage of the stomach was required. After this time she improved steadily and in ten days was out of bed, the wound having healed.

Six weeks after the relief of the obstruction the second operation of resection and anastomosis was performed for the removal of the redundant sigmoid. The divided ends of the bowel were turned in and the anastomosis made by the method described by Bloodgood.[2] The turned in ends were sutured outside the parietal peritoneum and drains carried down to them. The muscles, fascia and skin were closed up to the drains.

Leakage from one end of the bowel occurred on the fifth day and prevented primary healing. The sinus closed spontaneously on the twenty-second day and the wound healed tight a week later.

As the child's home surroundings were very poor, she was kept in the hospital a month after the wound had closed. During this time she spent the days on the roof garden and was given increased nourishment. Her bowels moved daily without cathartics, her digestion was unimpaired and on her discharge she was in perfect health.

114 West Franklin Street.

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## GASTRIC AND DUODENAL ULCER

### THE INFLUENCE OF OPERATIVE PROCEDURES ON GASTRIC MOTILITY AND SECRETION *

WALTER W. HAMBURGER, M.D.
AND
JAMES J. LEACH, M.D.
CHICAGO

It is generally conceded, both clinically and experimentally, that among the various factors responsible for chronic ulcer of the stomach, motor insufficiency and hypersecretion play the leading, if not the title, rôle. It follows that, in the treatment of ulcer, therapeutic procedures should be devised to control, so far as possible, these two important factors; in fact, the value of a given therapeutic measure can in a certain sense be gaged by its ability to restore the normal emptying time of the stomach (or to increase it) and to diminish the hyperacidity of the gastric contents.

Among various therapeutic measures instituted for the cure of gastric and duodenal ulcer, surgical procedures have been inaugurated in constantly increasing frequency. These surgical procedures are legion; they possess inexhaustible variations and modifications; they are constantly being supplanted by new models and new styles. Scant inquiry is devoted to the ultimate results of these operations, little thought to the permanent relief of symptoms, to the healing of the ulcer and the prevention of recurrences, and no consideration to gastric function, particularly gastric motility and secretion.

The present paper is a preliminary study of the postoperative results in a series of gastric and duodenal

2. Bloodgood: Ann. Surg., 1909, xlix, 161.

* From the medical and surgical services of the Michael Reese Hospital. Read at the first meeting of the Chicago Society of Internal Medicine, Feb. 22, 1915.

ulcers, with particular reference to the effect of operations on gastric motility and secretion, and the value of the procedure as gaged by these standards.

A few similar studies have been made. Wilcox,[1] in 1909, reported one of the earliest postoperative studies, finding in general that stomach acidity, particularly "active" hydrochloric acid, diminished regularly after gastro-enterostomy.

Schüller,[2] in 1911, in a comprehensive study of forty clinical cases from Leube's clinic, as well as experimentation on animals, concluded that gastro-enterostomy alone, and gastro-enterostomy plus pyloric resection, modified motility more than secretion. In cases of pyloric obstruction with motor insufficiency, gastro-enterostomy alone raises the emptying time to normal, *but does not increase it beyond.* (In one case the emptying time was delayed.) In cases without obstruction and good motility, gastro-enterostomy produced no change, the emptying time remaining normal (no increase). These results are different from those of Jonas, Steindel and others, who describe the emptying time increased above the normal in all cases of gastro-enterostomy. They likewise differ from the results of Hartmann and Soupault, Rosenheim, Dunin and others, who find the emptying time delayed or made worse.

In fifteen cases of the combined operation (gastro-enterostomy plus pyloric resection), Schüller found the motility of the "pylorus frei" stomach inconstant in different patients, and in the same patient at different times. With complete removal of the muscle-bearing portion of the stomach (antrum pylori), insufficiency is liable to occur, because of increased difficulty of overcoming strong jejunal peristalsis.

In reference to secretion, Schüller found rather universally the values of free and total acidity lower than before operation, similar to the conclusions of Krause, Renki, Kausch, Hartmann and Soupault, and others. A few cases showed no change in acid values. One patient with normal acidity before operation showed a constant postoperative hyperacidity. He noted no striking difference in acid values in gastro-enterostomy, with or without pyloric resection.

Dogaero,[3] in 1913, came to somewhat similar conclusions. He estimated the emptying time of the dog's stomach by use of gastric and duodenal fistulas after introducing a 5 per cent. solution of glucose. In dogs with complete pylorectomy and gastro-enterostomy, the stomach discharged its contents much more slowly than normal. A mixed dietary made this motor delay even more apparent. He concluded that the pyloric portion normally acts as an accelerator, and that in its absence (pylorectomy) the pendulum contractions of the jejunum act as a resistance to the relatively weak fundus musculature.

Faulhaber and Redwitz,[4] in 1914, analyzed twenty-six cases of penetrating callous ulcer of the fundus, in which a resection of the ulcer-bearing median portion of the stomach with direct union of the cardial and pyloric stumps had been made by Enderlen—the "sleeve" operation of American surgeons. In from sixteen days to two years following operation, the patients were submitted to a complete physical examination, test meals, fluroscopic and Roentgen-ray examinations, etc. All had gained in weight, had taken up their old occupation and could stand all foods in moderate quantities. Test meals showed free acid and total acidity markedly lowered; some even were subacid or anacid. Fluoroscopy showed early emptying time increased in all cases, although complete emptying time was variable—the early rapidity being only temporary. They found no constant relation between emptying time and secretion; for example, cases with most rapid emptying time had relatively high acidity. They concluded that the motor activity of the pyloric antrum and the sphincter was not disturbed by resection of the middle portion of the stomach, and that the time of emptying depends on the balance between the relatively inactive fundus and the active antrum.

1. Wilcox: Quart. Jour. Med., 1909, iii, 93.
2. Schüller: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1911, xxii, 715.
3. Dogaero: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 176.
4. Faulhaber and Redwitz: Med. Klin., 1914, Nos. 16 and 17.

The cases forming the basis for this study comprise seventeen—nine gastric and eight duodenal ulcers. With the exception of three private cases of one of us (Hamburger), these patients were obtained from the regular medical and surgical services of the Michael Reese Hospital. The patients either presented themselves voluntarily because of nonrelief from their operation, or came in response to follow-up letters. Of the seventeen patients, eight received no or only partial relief from their complaints; nine cases resulted in marked benefit or complete cure. The patients were examined for the most part on an average of from three months to two years following operation; one patient as early as five weeks, one as late as twelve years. So far as possible, all patients were submitted to complete physical examination, test breakfast and motor meal, fluoroscopy and Roentgen-ray examination before and after operation. The roentgenographic examinations were made under the supervision of Dr. Frances Turley. In some instances this complete examination was impossible; in a few cases we were forced to be content with only partial data, and in two cases letter replies constituted the only available information.

The gastric ulcers divide themselves into two groups: lesser curvature ulcers (four) and pyloric ulcers (five).

The following may be taken as a type of the former:

CASE 1.—S. W., merchant, aged 49 years, had a gnawing pain in the epigastrium one hour after eating for thirteen years and vomiting for two weeks. He had lost 15 pounds in weight. He was a heavy smoker and ate hurriedly. He had had chronic rheumatism twenty years previously. Physical examination was negative. Ewald's test meal revealed:

| Amount | Free | Total |
|---|---|---|
| 60 | 20 | 40 |
| 90 | 25 | 43 |
| 90 | 20 | 45 |

Motor meal was negative (seven hours). Fluoroscopy revealed the stomach completely empty in four hours. Roentgenoscopy revealed a penetrating ulcer of the lesser curvature.

The ulcer was excised near the cardia. No gastro-enterostomy was performed. Five weeks after the operation, examination revealed:

| | Amount | Free | Total |
|---|---|---|---|
| Ewald's | 190 | 0 | 10 |
| Motor meal | 40 | 30 | 90 |

Fluoroscopy revealed the emptying time at six hours, and roentgenoscopy a partial hour-glass constriction.

Nine months after the operation the patient wrote: "Now I eat practically everything, including meat; eat more than used to before operation; have no pain; have a better appetite; no vomiting; have gained in weight."

Epicrisis: Excision without gastro-enterostomy. Clinical result excellent. Motility: Slight motor insufficiency (hour-

glass) (tube and fluoroscopy) immediately after operation, probably only temporary. Secretion: Slight increase in amount—decrease in degree of acidity. Postoperative hypersecretion?

Of the three remaining ulcers of the lesser curvature, one had gastro-enterostomy with excision; two, gastro-enterostomy alone. All patients obtained a fairly satisfactory clinical result, those with excision the best. In all, secretion values were reduced. Motility was more complicated: 1, normal before—slight delay afterward (excision alone); 1, slight delay before—normal after operation (excision plus gastro-enterostomy); 2, normal before—normal after operation (gastro-enterostomy alone).

Results agree fairly well with Schüller, and parallel the conclusion of Bolton[5]:

"If stomach empties in normal time, gastro-enterostomy must be a useless procedure; operation would prove useless in treatment of an ulcer situated away from pylorus, either on lesser curvature or elsewhere."

The five pyloric ulcers are more difficult to handle. The following is an extremely brief summary of their —in some instances—extremely complicated histories:

CASE 2.—E. S., salesman, aged 48, had had a burning and gnawing pain one-half hour after eating for five years, and delayed vomiting. He had lost 40 pounds in weight. He had had typhoid twenty-seven years before.

Examination revealed an ulcer at the lesser curvature near the pylorus with marked pyloric obstruction; marked stasis with hyperacidity.

The operation consisted in resection of the ulcer-bearing portion, pylorectomy and gastro-enterostomy.

The result after ten months was excellent. The stasis was relieved. The emptying time was three hours. Tube and fluoroscopy were in accord. The acidity was reduced.

The positively good result in this case is in marked contrast to the following:

CASE 3.—A. C., blacksmith, aged 38, had had a burning pain two and one-half hours after eating for two years. There had been vomiting for two weeks. He had lost 12 pounds in weight. He had had typhoid fifteen years before.

Examination revealed an ulcer of the pylorus, with adhesions; marked stasis, with hyperacidity.

A posterior gastro-enterostomy was performed, the pylorus not excluded.

The result after six weeks was improvement. The stasis was improved (the stomach being empty in seven hours). Hypersecretion remained, and the acidity was the same.

In this case the motility result was better than the secretion, although the patient was not observed sufficiently long to be sure of the permanence of the result. Pylorectomy or pyloric exclusion should probably have been performed, in addition to gastro-enterostomy. There was probable postoperative hypersecretion.

CASE 4.—B. K., cigarmaker, aged 42 years, had had epigastric pain two hours after eating for eight years, with constant vomiting; loss in weight.

Examination revealed marked stasis, marked hypersecretion and hyperacidity. There was an old pyloric ulcer, with pyloric obstruction.

A posterior gastro-enterostomy was performed; the pylorus was not excluded.

The result was poor. The pain, vomiting and stasis were unrelieved. Gastric tetany, one month. Roentgenoscopy revealed a vicious circle. Stasis and hypersecretion were made worse.

A second operation for adhesions, with lateral anastomosis entero-enterostomy, resulted in improvement for three years. The result after three years was poor. There was complete obstruction, neither the pylorus nor the stoma functionating.

Epicrisis: No relief from gastro-enterostomy. Ulcer should have been resected and pylorus closed.

CASE 5.—A. W., aged 48, had had pain after eating for three and one-half years. There were no obstruction, hyperacidity or positive surgical indications.

Examination was negative.

Operation revealed adhesions and a scar at the pylorus. A gastrojejunostomy was performed, with no relief from symptoms. There was conversion of normal motility and secretion to stasis and hypersecretion.

Fluoroscopy revealed normal motility; motor meal, stasis.

A second operation for adhesions, with pyloric exclusion, resulted in the patient's feeling well for five months.

Epicrisis: Surgical interference not indicated. Patient had not had benefit of medical treatment. Conversion of normal stomach function into abnormal. No permanent relief from first or second operation.

From this series the following conclusions may be drawn: Gastro-enterostomy performed without definite surgical indications (stasis—hypersecretion) is liable to convert normal gastric function into abnormal. Gastro-enterostomy with definite surgical indications is liable to fail and increase stasis and hypersecretion if the pylorus be not excluded. The best results, with relief of stasis and hyperacidity, are obtained by pylorectomy (or pyloric exclusion) plus gastro-enterostomy. In the case of pyloric ulcer, excision and closure are of even greater importance than in ulcer of the lesser curvature. Conversion of normal to abnormal function is due to pylorospasm (Hertz[6]) or postoperative hypersecretion, or both. In the latter event, some cases evidence good motility, but show marked hypersecretion following the test breakfast and motor meals.

Postoperative hypersecretion (without stasis), as observed in this series, as well as in several duodenal ulcers, to be discussed later, has several interesting problems. From a clinical standpoint, it is likely that in cases showing acid contents after motor meals, the explanation lies not, as has been thought, in postoperative stasis, but in postoperative hypersecretion. Furthermore, postoperative hypersecretion may explain certain discrepancies found to exist between the results of bismuth-buttermilk meals, as observed by the fluoroscope, and motor meals, as determined by the stomach tube. In fact, in two cases the bismuth meal left the stomach within six hours, while the stomach tube at the end of seven hours yielded but 2 to 3 ounces of acid contents, with little or no food residue.

The physiologic mechanism of postoperative hypersecretion is described somewhat by Lobassow and Orbeli.[7] In certain operations on the dog's stomach, for example, the Heidenhain-Pawlow small stomach operation, they describe a hypersecretory postoperative period. This period of hypersecretion is usually transitory and is held to be due to increased irritability of the nervous control of the secreting glands, a result of operative trauma. Orbeli found a similar hypersecretory condition after making a simple stomach fistula. It is our belief that a similar postoperative hypersecretory period follows surgical procedures on the human stomach, and may account for certain postoperative findings. The thought occurs that postoperative hypersecretion may follow operations on other

5. Bolton: Ulcer of the Stomach, London, 1913.

6. Hertz: The Sensibility of the Alimentary Canal, London, 1911.
7. Orbeli: Arch. d. Scienc. Biol., 1906, xii, 1.

portions of the gastro-intestinal tract, such as appendix or gallbladder, or from narcosis alone. We hope to test this question out in the near future.

### ULCER OF THE DUODENUM

Without giving separate protocols of the eight duodenal ulcer cases, we shall confine our discussion to several points which their study has brought forth.

1. Two cases of gastro-enterostomy without pyloric exclusion showed rapid (two-hour) discharge of bismuth up to and by way of the gastro-enterostomy opening, with delay (six hours) of food beyond the opening—the bismuth finally passing out through the pylorus. This was true of the motor meal plus bismuth, as well as the regular bismuth-buttermilk meal. In one case, the delay of the contents beyond the opening amounted to a true stasis. Another case showed rapid early discharge up to the level of the opening, but delay of the residue in the small sac below the level of the gastro-enterostomy opening. Placing the patient in a recumbent position allowed this residue to discharge.

2. As in the case of gastric ulcer, pyloric exclusion plus gastro-enterostomy was attended by the best results. In two cases with the pylorus left patent, marked stasis occurred in the overfilled and distended duodenum at the site of the ulcer! In this case, in spite of the wide, well-placed enterostomy opening, the maximum discharge occurred through the patent pylorus.

3. Cases with normal preoperative findings developed postoperative stasis and hypersecretion, similar to gastric ulcer.

4. Two duodenal ulcer cases showed late — four and twelve years, respectively — gradual closing of the gastro-enterostomy opening, necessitating a second anterior operation. Zweig[8] and Mallory[9] describe cases of spasm of the opening, similar to pylorospasm.

### SUMMARY

1. Operative procedures on stomachs with normal motility and secretion frequently produce stasis, hypersecretion or both.

2. Stasis may be caused by pylorospasm, by contents stranded below the level of the gastro-enterostomy opening, or by contents held between the opening and the pylorus.

3. Hypersecretion may occur coincidentally or secondarily to stasis, but also independently, as a true postoperative hypersecretion, similar to the same conditions in dogs. This hypersecretory period is probably due to operative trauma, and is likely to be temporary. Postoperative hypersecretion explains certain discrepancies between bismuth and motor meal findings.

4. Operative procedures on stomachs with delayed motility and hypersecretion usually reduce motility to normal (but not beyond), and lower hyperacidity. This is particularly true if the pylorus is closed. If the pylorus is left patent, vicious circle, stasis in duodenum, spasm or secondary contracture of the opening are liable to continue the abnormal gastric function or to increase it.

5. Nonrelief from surgical interference in gastric and duodenal ulcer is due to (*a*) lack of properly placed surgical indications; (*b*) lack of thorough and prolonged preoperative medical treatment; (*c*) failure to devise the proper surgical procedure to meet the individual case, and (*d*) lack of prolonged *post*operative medical treatment.

104 South Michigan Avenue—Michael Reese Hospital.

8. Zweig: Arch. f. Verdauungskr., 1913, xix, 740.
9. Mallory, William J.: Gastric Hypertony and Gastro-Enterostomy, THE JOURNAL A. M. A., June 13, 1914, p. 1883.

## SOME SURGICAL EXPERIENCES AMONG INDIANS OF ALASKA

EMIL KRULISH, M.D.
Passed Assistant Surgeon, U. S. Public Health Service
JUNEAU, ALASKA

Every physician at some time during his career is called on to administer aid and even to perform a serious operation under most trying circumstances, and without proper equipment and assistants; in this respect the following experience may be of some interest.

It has been estimated that at least 20 per cent. of the Indian children in Southeastern Alaska are afflicted with adenoids and diseased tonsils which require surgical interference. This condition is largely due to the rainy weather which prevails in this section of Alaska. During a recent tour of inspection of the Government Indian Schools in Southeastern Alaska, I performed fifty-seven surgical operations in thirteen days at Klawock and Hydaburg, two Indian settlements 40 miles apart on Prince of Wales Island.

LIST OF OPERATIONS

| | | |
|---|---|---|
| HYDABURG: | | |
| January 14 | 1 | pterygium |
| January 15 | 3 | adenoids and tonsils |
| January 16 | 5 | adenoids and tonsils |
| January 17 | 4 | adenoids and tonsils |
| January 17 | 1 | lipoma, weight 1½ pounds |
| January 18 | 7 | adenoids and tonsils |
| KLAWOCK: | | |
| January 22 | 1 | adenoids and tonsils |
| January 22 | 1 | harelip |
| January 23 | 7 | adenoids and tonsils |
| January 25 | 3 | adenoids and tonsils |
| January 25 | 1 | ectropion |
| January 26 | 4 | adenoids and tonsils |
| January 27 | 4 | adenoids and tonsils |
| HYDABURG: | | |
| January 29 | 5 | adenoids and tonsils |
| January 30 | 5 | adenoids and tonsils |
| January 31 | 5 | adenoids and tonsils |
| | 53 | |
| | 4 | other operations |
| | 57 | operations in 13 days |

The table shows the maximum number of cases operated in a single day to be seven; five in the morning from 9 to 12, and two in the afternoon. The patients operated on for adenoids and tonsils were between the ages of 2 and 38 years; all operations were done under chloroform or ether anesthesia, and there were no fatalities or serious complications. But one case required resuscitative measures from the effects of chloroform, and a tonsil hemostat was applied in one case to check persistent hemorrhage.

The school house in each community was utilized for a hospital. One room served as an operating room and another as a receiving ward for postoperative cases, where they were kept for a few hours before being carried to their homes on stretchers. An improvised operating table was constructed from rough lumber and covered with blankets furnished by the patients. Sponges were prepared and sterilized by baking in an oven, while mercuric chlorid solution was used for the hands and towels and compound solution of cresol for instruments. As operating gowns were

unavailable, a towel over the chest served as a substitute. The corps of assistants comprised a trained nurse to hold the tongue depressor, one teacher to light the oral cavity with a pocket electric flashlight and assist in sponging the field of operation, and a second teacher who administered the anesthetic under supervision.

The evening before the operation, and after a careful examination of the heart and lungs, each patient was given a dose of calomel, instructed to refrain from breakfast the following morning, and directed to bring two blankets and five towels for his individual use at the appointed hour. These instructions were very faithfully complied with and with two exceptions there was no vomiting during the operation.

I personally administered the anesthetic until the operative stage was reached, when the teacher continued it under close observation. The hands of the operator were immersed in bichlorid solution for a few moments, the head and chest of the patient covered with towels treated in the same solution, and the operation commenced.

The mouth gag being inserted in place and a tongue depressor holding the tongue off to one side, the tonsil was grasped by a forceps, dissected out, and enucleated with a snare. A forceps carrying a sponge was quickly introduced into the space formerly occupied by the tonsil and pressure applied to check hemorrhage while the anesthetic was resumed. The second tonsil was enucleated in the same manner, after which the adenoids were scraped with a curet and any remaining adenoid tissue completely removed with the index finger covered with gauze. The patient was then quickly turned over on the side to facilitate the expulsion of blood into a bucket on the floor. After all hemorrhage had ceased, the patient was cleansed and carried into the receiving ward on a cot, where the relatives applied cold towels about the neck and looked after him during vomiting spells. After each operation the instruments were washed off in water and thrown into the lysol solution, while the towels of the next patient were treated with bichlorid solution and the blankets arranged on the table.

This experience illustrates what can be accomplished under adverse conditions and without the facilities usually demanded by surgeons in hospitals.

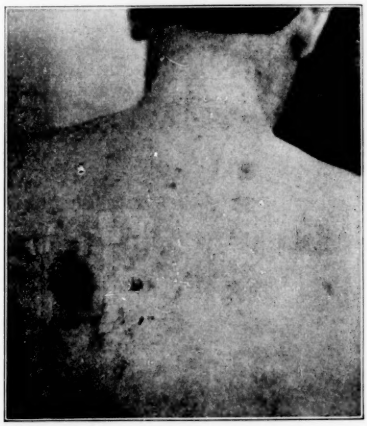


Fig. 1.—Primary carcinoma of back with metastases in axilla and neck (Case 5).

**Tincture of Iodin in First Aid Packet.**—The Italian government has ordered thousands of small elastic rubber tubes to contain tincture of iodin. They are to be given the soldiers with their first-aid packet as an improvement over the tiny glass bottle of tincture of iodin and the brush given the French soldiers. The *Policlinico* adds that the British are said to be adopting the French method. In the Italian method the fluid is sprayed on the wound by pressure on the rubber tube.

## EXTENSION OF THE LIMITS OF OPERABILITY OF RECURRENT CARCINOMA OF THE BREAST

CARL BECK, M.D.
CHICAGO

The operability of a carcinoma of the breast depends on many factors, chiefly, however, on the extent of the pathologic condition. It is true that many varieties of carcinoma exist as far as the malignancy and progress of the lesion are concerned. Some grow slowly, some rapidly, some form their metastatic deposits very gradually, others show from the start a quick dissemination. On the whole, however, the progress is similar in all, namely, first an invasion of the regionary axillary glands, then of the glands of the supraclavicular region of the same side, then of the chest and sometimes of distant portions of the body.

Experience shows that recurrence of the growth after a skilful radical excision is mostly seen in the axillary region and in the neck, whereupon the vessels, particularly the veins and the nerves of the arm, become blocked and compressed. The neuralgic pains of the arm and the edema of the same are for the most part the evidences of such a recurrence. When this stage is reached, most surgeons consider the case inoperable with the view of radical cure, and justly so, because it is very questionable that an elimination of the process now spread into a region of great vessels and proximity to the large nerve trunks is possible. The only thing to do in such cases is to comfort the patients with a Roentgen ray or Coley's serum and the most reliable morphin. Such cases are always a dread to the surgeon.

Many times it seems to me cruel to allow such a patient to linger toward a certain death and stand by while he is dying by inches. In the course of the last few years, however, I have been able to snatch a few cases from such certain death, and since years have elapsed from the time of treatment and no recurrence has taken place, I feel that there is a possibility of doing some good in some of such cases by a more extensive operation. It consists in the exarticulation of the whole shoulder-girdle, including clavicula, arm and scapula, with the plexus and the vessels of the affected side, with the ribs, if necessary, should they seem invaded by the carcinoma. It may be that such procedure has been done elsewhere; I have not taken the trouble to go through the literature to find instances of that kind; at any rate the procedure is not common and its publication may be useful to recommend it.

The technic of the operation is not simple in every case, and there cannot be prescribed a definite plan in detail. In the individual case there must be an indi-

vidual plan in order to make the operation safe. It is a very extensive operation and requires great delicacy, because of the removal of such a large part of the body. The section of such large nerve trunks is a great shock to a person afflicted for a long time and often not in the best condition.

On the whole, however, it begins with the formation of a large skin flap destined to cover the whole area of the defect, the exarticulation of the clavicle following, then dissection of the tissues of the neck and axilla in one block, ligation of every vessel as it is reached, cautious cutting of one nerve after the other, and lastly, the separation and excision of the scapula. Altogether I have done this operation eight times in nine years. All cases were desperate, some of the patients operated on several times by myself or others, were all considered inoperable, some of them having consulted the best operators of the country, who declared surgical operations useless.

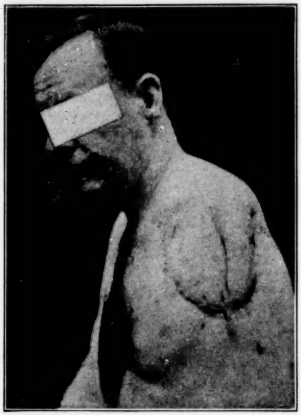


Fig. 2.—Patient (Case 5) five years after last operation.

REPORT OF CASES

Case 1.—Mrs. M., aged 34, had carcinoma of the breast. Radical operation in 1905. One year after operation recurrence in supraclavicular region, glands in axilla, swelling of arm, severe neuralgia; several secondary incomplete operations afforded no relief. There were strabismus, with rigid contraction of neck, a regular torticollis from contracture, and severe headaches, showing diffuse dissemination. I decided to remove the shoulder with adjoining glands and all tissues of the neck (1906). The patient was relieved and lived about six months but finally died from intracranial carcinomatosis.

Case 2.—Mrs. C., aged 60 years, an old Italian woman. History similar to that of Patient 1. Operation was performed in 1907 for carcinoma of the breast; several incomplete secondary operations by different surgeons. In 1908 the patient was suffering from intolerable pains in arm and chest, a tumor pressing on the plexus, and coughing spells; arm immovably adherent by carcinoma to the chest; a desperate case. In September, 1908, she was operated on by exarticulation of the shoulder-girdle. The upper four ribs, closely connected with the carcinoma, were resected with the tumor. The patient made a good recovery, and lived three years practically free from symptoms. I have not heard from her since 1911, and have not been able to locate her. Most probably she has died since that time.

Fig. 3.—Patient in Case 6 shortly after removal of shoulder girdle.

Fig. 4.—Patient in Case 6, posterior view.

Case 3.—Mrs. Z., aged 65, a German housewife, with carcinoma of the breast, was operated on several years ago in Germany; had in 1909 a recurrence deep under the axilla, with immovability of the arm, which was edematous and painful. The case was very favorable for radical operation with exarticulation, which was done. The patient made a good recovery, but developed erysipelas after the operation and had to be removed from the hospital. She died of erysipelas at her home.

Case 4.—Mrs. C., Italian, aged 58. A case similar to Case 1. Exarticulation performed in 1909 with good surgical result, but had a complication showing that the pleura had been invaded. The patient lingered for some time and then died.

Case 5.—Mr. J. F., recommended to me by Dr. H. on account of carcinoma of his back (Fig. 1). Radical operation was performed, with excision of the infected axillary glands. Free for some time; then there was a recurrence of the tumor on the neck above the clavicle and extending into the middle of the neck. Extirpation of the cervical glands in a secondary operation. Relatively well for several months, but returned with recurrence in the axillary pit, with a large group of indurated glands, swelling of arm and pain. Removal of these glands afforded no relief; patient developed lymphangitis of arm and severe septic infection, which ran him down considerably. After he had recovered from this operation the patient felt somewhat better than before, and attended to his business, though not free from recurrence, which showed on the neck again. The arm was only partly movable and swollen. At this time I proposed exarticulation as a last resort. The gentleman, who holds a prominent position, could not decide to have it done and consulted different surgeons. One of the most prominent wrote: "I cannot see how anything can be done except treatment with Coley's serum or morphin."

Seeing no alternative, the patient finally submitted. The operation was performed in the presence of a prominent surgeon of London, England, who happened to be visiting me at that time. The patient made an absolute

recovery and has been free from recurrence since, now five years (Fig. 2).

CASE 6.—Miss J., school teacher, aged 30, was brought to my office from the depot, just about to return home from the hospital. She had a severe hemorrhage from a tumor of the breast. All the patient's clothes were saturated with blood, which was running down on her body. She had been at one of the hospitals for several weeks, treated with the Roentgen ray for an inoperable carcinoma of the upper breast and was sent home with the decision that nothing more could be done. Before her entrance to the hospital she had been operated on at home twice within a year by her local physician, an incomplete removal of the breast tumor having been done; then she came to Chicago, but radical operation was thought impossible by one of our most competent surgeons. As she reached the depot the hemorrhage occurred. Hemorrhage had occurred twice before while at the hospital. By a compression bandage I stopped the hemorrhage and after two days we took a roentgenogram, ascertaining that the pleura and lung were free. I decided on exarticulation. Technic as usual. She made a quick and splendid recovery and has been well since; has had no recurrence and was shown at the Clinical Congress of Surgeons in 1913 (Figs. 3 and 4).

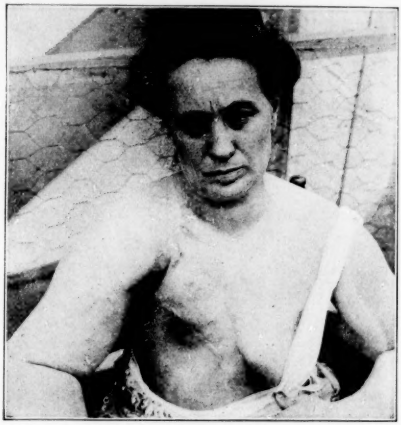


Fig. 5.—Patient in Case 7, showing condition after several radical operations. Note neck and both arms.

CASE 7.—Mrs. A., aged 54, came to me after having been operated and reoperated on twice for carcinoma of the breast. Had all the typical symptoms of secondary carcinoma of the type described above. Her appearance seemed to indicate that she would make an excellent case for our operation. The only difficulty was the very tight scar formation around the neck of the humerus, owing to the different dissections (Fig. 5). In this case I learned that we have to be careful in sectioning the nerve trunks, and particularly the deep nerves of the neck, vagus and phrenicus. I cut several large nerves and at once pallor and weak pulse appeared and deep shock followed, from which the patient rallied slightly only for a time. Just as I completed the dissection she died.

CASE 8.—A few weeks ago I operated on Mrs. S., a poor woman, who suffered agonizing pain from a recurrent tumor of the breast and neck after a radical operation. She was in continuous pain and morphin would not stop it. I decided to cut the nerves of the plexus only, as it seemed impossible to remove the carcinoma even with such an extensive operation as exarticulation. On the fourth rib, near the sternum, was an isolated, ulcerated tumor which could not easily be removed (Fig. 6). Under novocain I dissected out and cut one nerve after the other of the plexus.

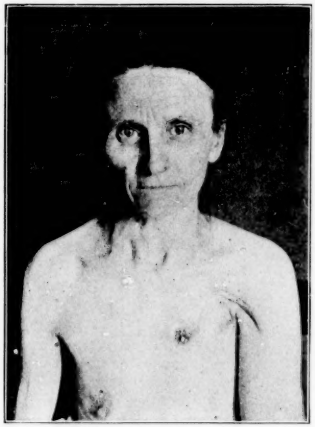


Fig. 6.—Patient in Case 8, showing difference in the arms, solitary carcinoma on chest and metastasis in left side of neck.

Following the operation, the actual pains in the arm stopped, but on the neck and around the shoulder there was still neuralgia. The arm was so heavy that the patient said it felt like a ton and therefore I removed it at a second operation, and since that time the patient is free from pain and has also improved in general health. The isolated recurrence of carcinoma on the ribs is yielding slowly to the blue rays. The Roentgen ray seemed to make it disappear more rapidly, but patient seemed to grow weaker, it was thought, on account of too rapid absorption of the destroyed carcinoma material.

Summing up these results, I may say that while they are not ideal, considering the desperate condition of the cases, they are very good and the procedure seems to me commendable. After all, when I look back on my results in twenty-six years of surgical practice, the only permanent relief I have ever seen from any remedy in carcinoma was from the knife, and all other agencies on which I have pinned a great deal of hope at first, have in most instances disappointed me. Most important of all seems to me the deduction that even some of these apparently hopeless cases have still a slight chance when we go to the limit.

108 North State Street.

**The Mortality Bill Against Alcohol.**—In a number of life insurance companies, chiefly in Great Britain, the abstainers were separated from the rest of the policy holders (all accepted as temperate and healthy risks), and the difference in the death rate determined. In one institution of London over a period of forty-five years the mortality of the nonabstainers, or so-called moderate drinkers, accepted as temperate and healthy risks, was 37 per cent. higher than that among the total abstainers. In another association of London over a period of twenty-seven years the mortality of the nonabstainers was 54 per cent. higher than among the total abstainers. In a third life assurance company of Glasgow, over a period of twenty-nine years, the mortality of the nonabstainers was 44 per cent. higher than the mortality among abstainers. In a Canada company over a period of eight years the mortality of the nonabstainers who had been accepted as temperate and healthy risks was 78 per cent. higher than among the abstainers.—Monthly Health Letter, Life Extension Institute.

# FRACTURE OF THE PATELLA

## AN ORIGINAL METHOD OF RETAINING THE FRAGMENTS IN APPOSITION

JOHN A. WYETH, M.D., LL.D.
Surgeon-in-Chief to the New York Polyclinic Medical School and Hospital
NEW YORK

For the last three years, the following simple and successful method has been employed in recent cases of ordinary transverse fracture of the knee-pan:

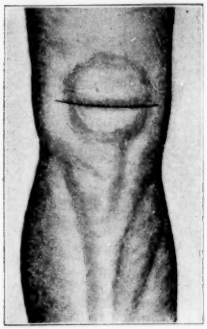


Fig. 1.—Line of incision across the middle line of the sulcus due to separation of the fragments.

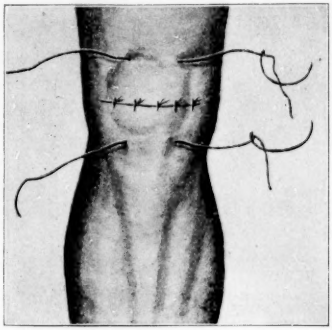


Fig. 2.—The retaining sutures of linen inserted and the incision closed, after removing the clot and reuniting the torn edges of periosteum.

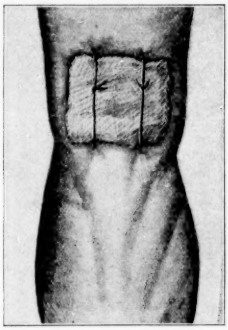


Fig. 3.—The dressing applied and the retaining stitches tied.

The edges of the fragments are exposed by a transverse incision over the center of separation, and the intervening clot washed out with reasonably hot salt solution, a syringe being used with as much force as is necessary to cleanse thoroughly. A gentle swabbing would suffice, but water gives a minimum of traumatism.

The opposing frazzled edges of overhanging connective tissue are now carefully stitched with a continuous, very fine linen suture, and the skin incision closed with running chromicized gut.

The holding device is as follows:

A strong quarter curved needle (Hagedorn by preference) threaded with extra large linen (No. 5) is carried across the lower border of the lower fragment, dipping greedily into the substance of the ligamentum patellae, just along its expanded attachment to the patella.

The points of entrance and exit of this needle should be about 1¼ inches apart, and the thread ends left 8 inches long.

The same maneuver is practiced along the upper edge of the upper fragment, the needle going well into the quadriceps extensor insertion, but not entering the bursa beneath this tendinous expansion.

Two strips of sterile gauze are now laid over the incision, and over these are tied very firmly, as one would tie one's shoestrings, the upper and lower ends of the opposing threads. In this way, not only are the fragments held in perfect contact, as no separation by muscular contraction is now possible, but also they cannot be tilted, or override.

A plaster-of-Paris cast is applied over all, from the ankle to near the groin, and the patient kept in bed for a week, with the foot elevated on a pillowed chair.

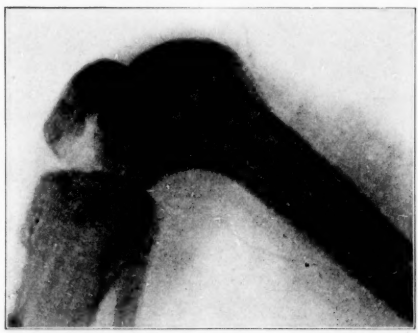


Fig. 4.—Roentgenogram one year after operation. Extreme flexion; function normal.

After this, locomotion on crutches is permitted *ad libitum*. The dressing is not disturbed for six weeks, when the threads are removed, and then slight passive motion is made, while the fragments are very strongly supported. The cast is readjusted, and there is a repetition of this two weeks later, and again, two weeks further on. The knee should be guarded from overstrain for at least six months, as a common-sense precaution. The danger of ankylosis is nil.

I have always done this operation with ether anesthesia. If done with novocain, the holding threads should first be inserted, as an assurance against possible involuntary contraction of the quadriceps extensor.

Figure 4 shows the result one year after operation. The function is perfect.

244 Lexington Avenue.

**Industrial Accidents.**—A conservative estimate of the economic loss in this country through industrial accidents places it above a quarter of a billion dollars each year. This is more than two million workmen could earn in twelve months at $4 a day.—From an address by J. Kirby, Jr.

# New Instruments and Suggestions

## A NEW BONE CLAMP

R. E. FARR, M.D., MINNEAPOLIS

This instrument is designed for the purpose of reducing and holding reduced the fragments of a fractured bone, when the open treatment is indicated, while one of the various forms of fixation methods is applied.

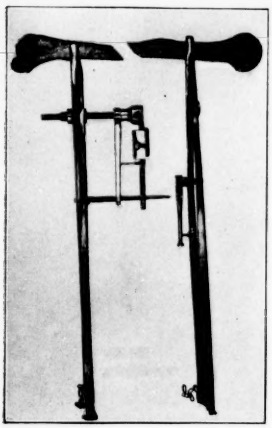


Fig. 1.—Farr bone clamps in position for reduction of fracture.

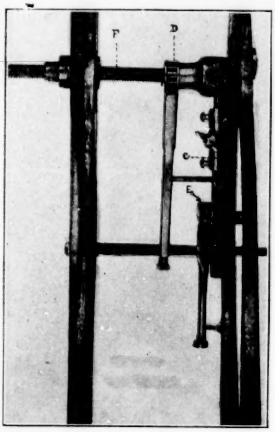



Fig. 2.—Mechanism of clamp. *C*, clasp for locking forceps together; *D*, ratchet by means of which shortening is overcome; *E*, ratchet for lateral movement of fragments; *F*, bar as fulcrum.

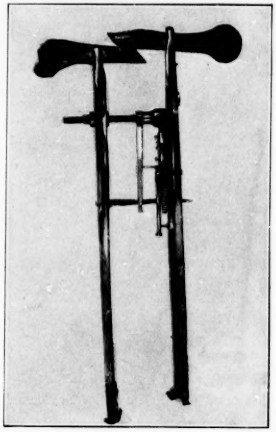


Fig. 3.—Clamp in position for reduction of overriding.

It consists of two pairs of long-handled forceps (Fig. 1), with two ratchets which work in planes at right angles to each other. The technic of application is the following:

After the point of fracture is freed, one clamp is placed on each fragment at right angles to its long axis and at points which will allow the forceps to be locked together with the clasp *C* (Fig. 2). The only other requirement before locking the forceps together is that the fragments be held parallel to each other or nearly so. Providing there is overriding, which is usually the case, the ratchet at *D* (Fig. 2), is worked to and fro until the shortening is overcome. Here I have made use of the jack-screw described by Gerster but have added the ratchet attachment which I find to be a decided improvement. This ratchet is reversible and after the fragments are moved laterally by the use of the ratchet *E* (Fig. 2), and brought into alignment, they may be made to engage with all of the precision one may desire (Figs. 3 and 4). An alternate upward and downward movement of the handles with the bar *F* (Fig. 2), as a fulcrum in addition to the movements given by the ratchets *D* and *E* gives one absolutely complete control over the fragments. In applying the fixation of Lane, a clamp may be used temporarily at the line of fracture, once the reduction is accomplished, and the other clamps may be released sufficiently to allow the metal splint to be slipped into place, when it is securely held by a second closure of the clamps while the screws are inserted. This first model, though crude, seems to fulfill the indications for which it was designed. Figure 5 shows the grasping surfaces of the forceps. They are designed to hold the bone securely, both before and after the Lane plate is in place. The distance of the ratchets from the field of operation renders the carrying out of an aseptic technic easy and certain. The handles are made long and flexible and are locked with chains. They will hold securely a bone of any size.

Suite 301, Reid Corner.

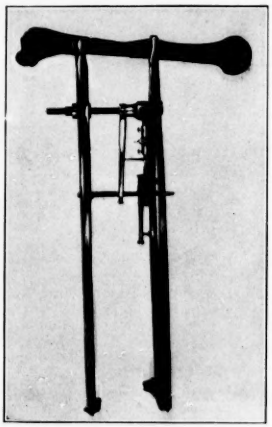


Fig. 4.—Ends of fragments in apposition.

Fig. 5.—Grasping surface of forceps.

**Density of Population and Infant Death Rate.**—Based on the school census for 1914 it was found that the average number of people per in Chicago is 19.5. The wards having death rates above the average have an average of 49.7 people to the acre. It is not congestion alone, but congestion plus bad sanitary conditions that produce high infant death rate.

## TUBES FOR INTRA-URETHRAL MEDICATION

MAX GOLDMAN, M.D., KANSAS CITY, MO.

For the introduction of various medicinal substances into the urethra I have devised, and have been employing for some time, a series of tubes modeled after the pattern of the Ultzmann instillation syringe. These tubes are made of sterling silver, and range in size from 14 F. to 24 F. In shape they follow the curve of the classical urethral sound, and all

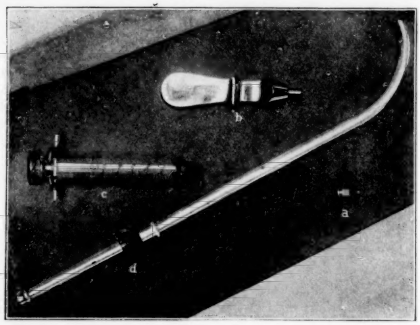



Fig. 1.—Urethral tube and accessories: (*a*) adaptor, (*b*) sound handle, (*c*) syringe, (*d*) irrigating nozzle.

have capped ends with threads suitable for the attachment of the universal hypodermic syringe. By means of adaptors they can readily be adjusted to fit all glass and record syringes.

There is also a sound handle, which is likewise adjustable, so that each tube can easily be converted into a urethral sound. In addition, another attachment is supplied in the way of a short silver tube, much like the ordinary glass irrigating nozzle, but having an adjustable small end for attachment to the tubes, to be used in cases in which irrigation of the bladder or urethra is desired.

The value of these tubes is enhanced by the fact that (1) they can be used (*a*) as sounds in any stage of the disease (for instance, urethritis); (*b*) not only as a means of instilling medicines in the posterior urethra, but also for placing any variable amount of an agent anywhere along the urethral canal from the vesical orifice clear out to the urethral meatus; (2) any size can be used, thereby avoiding irritation of the mucous membrane; (3) irrigation can be gently made with any one of the instruments, and followed by the injection of some medicinal agent without too much instrumentation; (4) the effect of both sound and tube is secured without the additional use of a sound proper.

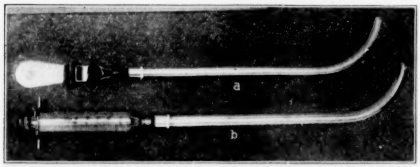



Fig. 2.—Urethral tube, converted into (*a*) sound, (*b*) syringe.

In chronic posterior urethritis or gleet this treatment will be found of the highest value; and in urethral stricture of long standing it is of much assistance when combined with other methods in softening up inflammatory indurations, and relieving congestion of the mucous membrane. After cystoscopic examinations or urethral examinations in which considerable instrumentation has been carried out, a local treatment with one of the tubes, an albuminate of silver preparation being placed along the canal from the bladder outward, will do much in the way of preventing a urethral chill or infection by its antiseptic and astringent effects on the mucous membrane.

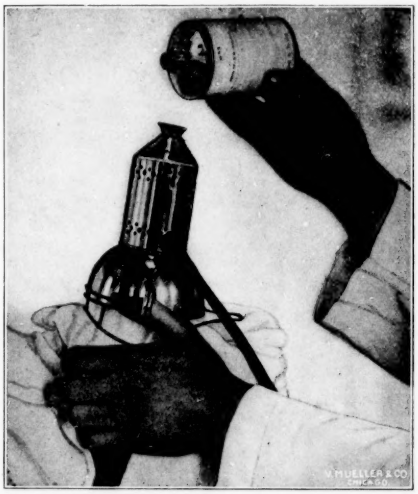
If undue difficulty is experienced in introducing the instrument, sterile glycerin may be used as a lubricant, but as a rule the medicinal agent itself is sufficient for this purpose.

1222-1223 Rialto Building.

## A NEW METHOD FOR ETHER ADMINISTRATION

J. W. SNYDER, M.D., MICHIGAN CITY, IND.

I have endeavored to devise a simple means of securing a positive warm ether for anesthesia, a method which would employ the principles of the open mask and would have the added feature of a warm anesthetic. To do this I have employed the ordinary mask and have superimposed on it an electric heating coil. This coil is built about a seamless brass tube placed vertically to the top of the mask. The tube




Apparatus in use, showing thumb of left hand holding mask in position while the fingers support the jaw. The heavily insulated cord for connection to the city current is shown and also the manner in which ether is dropped through the coil.

at various levels has wire gauze screens and plates which become heated from the surrounding coil, and which in turn heat the ether as it is passing through them. The coil is attached to the mask by means of a casing which extends part way down over the mask proper. The coil and casing may be quickly detached from the mask by a slight turn to the right, leaving the mask free. The coil is built for the usual 110 volt alternating city current, and is so constructed that it has a maximum temperature and will not become too hot if connected up for an indefinite time. In use the coil is attached to the city circuit and left on for about twenty minutes before the anesthetic is started. As previously indicated, the coil needs no regulating, as it will not become hot enough to decompose ether if left in circuit for hours, and it is only necessary to keep it connected to use it repeatedly.

The mask portion proper is prepared with layers of gauze as is usually done, and when the coil has been connected for a period of twenty minutes as previously described, it is

attached to the mask, and both are placed over the patient's face. From this time on the anesthesia is by the ordinary drop method, except that instead of dropping ether on the mask, it is dropped through the brass tube inside the coil, and so reaches the mask proper as a warm gas. The only caution at this period is to give the ether more slowly and in smaller amounts than by the cold method, as it reaches the patient more quickly and more is available to the patient after being heated than when it is dropped cold on the mask. Towels may be placed about the mask as desired, but in the majority of cases they are not required, and in practically all they may be removed as soon as full narcosis is reached. In this way we give an abundance of air to the patient and as a result have little cyanosis. The patient's good color throughout has been quite remarkable. During the period the anesthetic is being crowded, a little of the ether may reach the gauze of the mask unchanged; but the coil will speedily regain its temperature as soon as the rate of administration can be somewhat slackened, and will again convert all of the ether to a gas. As the patient breathes, warm air is inhaled and exhaled, as can be readily noted, a quite different matter from breathing through a mask covered with ice crystals of the exhaled breath.

As to the results in the employment of this method, I have observed the following:

1. The patient goes to sleep more easily without coughing or holding his breath.
2. There is an absence of second stage excitement in the great majority of cases.
3. It is a dry anesthesia, with absence of mucus from the air passages, except in the deepest prolonged anesthesia.
4. Anesthesia is easily maintained.
5. As a rule, the patient is brighter on awakening and awakens in a shorter time.
6. Postoperative nausea and vomiting are absent.
7. By reason of conserved bodily heat we should expect shock to be less; and this conservation, together with absence of bronchial irritation, tends to lessen the occurrence of postoperative ether pneumonia and bronchitis.
8. The total amount of ether used is diminished by approximately one-half.

## AN ACTUAL POCKET MERCURIAL SPHYGMOMANOMETER

HUGH HAMILTON, M.D., HARRISBURG, PA.

I have found the various sorts of blood pressure instruments defective in one essential—all are bulky. Of the two kinds of mercurial and dial gages, the mercurial is esteemed the best. In an effort to devise an instrument which could be carried on the person without exciting curiosity in private practice, the one illustrated resulted.

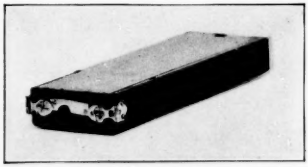


Fig. 1.—Pocket mercurial sphygmomanometer closed.

The mercurial hinge cock for the mercury is from an instrument made by Tagliabue. I claim only reduction in bulk and consequent mechanical arrangements, the whole apparatus weighing about 1 pound.

The photographs are precisely at the identical focus. Therefore the comparative size open and shut is represented in true proportion.

After careful comparison the mercurial column may be regarded as the most certain to give true results because it is fixed at a zero by gravity and not through artificial standards essential in all other devices dominated by springs as dial instruments, that may some time or other lose the zero, which automatic quicksilver will not do. In this little box I have added beside the U tube a thermometer for the room temperature. At the time of taking an observation of a "pressure" the body temperature is also then noted; across the space in the U tube about midway a level is inserted in the wooden support.

The wooden support for the U manometer of the sphygmomanometer is a free lid to the box. The edge under the

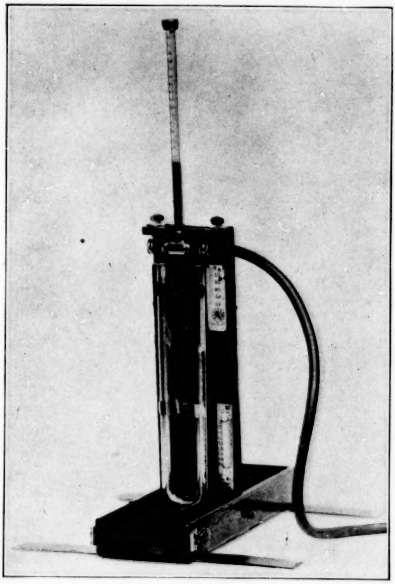


Fig. 2.—Pocket mercurial sphygmomanometer open for use.

curve of the U fits upright into a slot in the center of the box, fastened by braces rising from opposite ends of the box. On the bottom of the box are four blades that extend at right angles to the length of the box resembling when opened "a turtle." This little box is 8½ inches long, 2¾ inches wide and 1¼ inches thick or 22 by 7 by 3 cm. The hope is that this small (actual pocket) case may make the employment of the accurate mercurial sphygmomanometer available in clinical private practice and assist all in more precise prognoses.

## ADJUSTABLE SPLINT FOR FRACTURES ABOUT THE ELBOW JOINT—CONVENIENT STAND FOR THE DIAGNOSIS OF PES PLANUS*

WILLIS E. HARTSHORN, M.D., NEW HAVEN, CONN.

### ADJUSTABLE SPLINT FOR FRACTURES ABOUT THE ELBOW JOINT

Fractures of the external and internal condyles of the humerus, T-fractures into the elbow joint and comminuted fractures in this region often afford occasions in which an adjustable angular splint can be used to great advantage. The splint, a description of which is here outlined, is distinctly a simple affair which can be made by any one in a comparatively short time. This fact offers the chief reason for its presentation. It consists of two wooden splints *A* and *B* (Fig. 1), the length varying in children and adults. These

* From the Surgical Service of the New Haven Dispensary.

are connected by an ordinary door hinge, *C*. This is held in position by small stove bolts and nuts. The pin which ordinarily connects the two parts of the hinge is driven out. The inner edge of one side of the loop and the outer edge of the corresponding loop in each case is tongued and grooved with a file as noted in the sketch. A thumb bolt and nut is substituted for the original pin, and the splint is complete.

The general utility is emphasized because it can be tightly folded together and placed in a bag. The two wooden parts

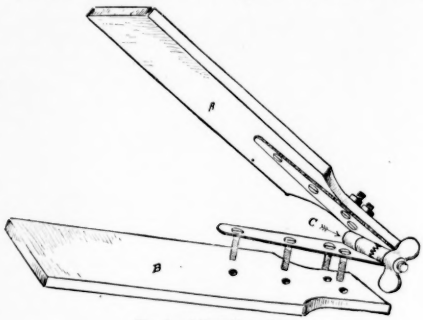



Fig. 1.—Adjustable splint.

can be removed by unscrewing the nuts on the heads of the bolts, and they can together or separately be used in fractures of the forearm, hands or fingers. Any degree of angle from the most acute can be formed in a moment's time without the removal of the splint from the extremity. A fracture of the olecranon can be treated in the extended position or in the semiflexed position. In fractures occurring in the upper third of the forearm where it is necessary to immobilize the elbow joint, it will be found useful, an anterior wooden splint supplementing the posterior. To tighten the splint so that it will hold firmly the angle needed, the thumb bolt is set with a wrench. With the ordinary commercial hinge, the loops at the center are a little too thick to admit of adjustment with the fingers alone. If desired, these loops can be filed thinner so that the thumb can be used to fix the angle; this, however, requires either a specially built hinge or the expenditure of a little more time in the making. Figures 2 and 3 show the application of the splint.

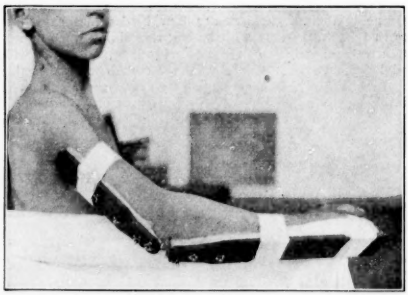


Fig. 2.—Adjustable splint applied to extended forearm.

CONVENIENT STAND FOR THE DIAGNOSIS OF PES PLANUS

At the suggestion of Dr. Joseph M. Flint of the department of surgery, who had observed in one of the European clinics visited by him a similar stand, the one illustrated was constructed at the surgical laboratory and has been found useful in the surgical clinic of the New Haven Dispensary as an adjunct to the general physical examination of patients. It deserves consideration because it presents a simple method of determining the condition of the arches when symptoms including pain in the legs and feet are presented.

In the illustration (Fig. 4) it will be noticed that the area of pressure on the sole of the foot is sharply contrasted with the normal tint of that portion free from pressure. In actual use this is much better shown. If the pressure area encroaches on the inner side of the foot, the various grades of pes planus are suggested. This simple apparatus does

Fig. 3.—Adjustable splint applied to flexed forearm.

away with the need of the patient's standing on blackened or wet paper, is always ready for service, and gives instant indication of pressure wrongly directed or a weakened arch.

It consists of a box made of white wood, two sides of which are omitted. The mirror is inserted obliquely on the inside at an angle of 45 degrees. The top of the box should be of heavy plate glass at least half an inch in thickness. This thickness should be emphasized, as otherwise there might be danger of its breaking under the weight of the patient, and a serious accident occur.

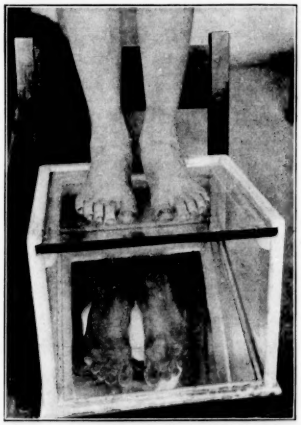


Fig. 4.—Stand for pes planus.

This simple stand is of course not of especial assistance in actual orthopedic work; but in the ordinary routine of a surgical clinic, it saves time and has proved an effective and valuable assistant in the diagnosis of arch conditions which are of such frequent occurrence in the type of patients frequenting a dispensary.

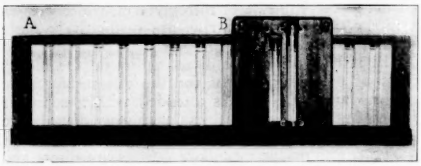
1138 Chapel Street.

## A SIMPLE COLORIMETER FOR USE IN THE PHENOLSULPHONEPHTHALEIN TEST FOR KIDNEY FUNCTION

JAMES S. BROTHERHOOD, M.D., GRAND RAPIDS, MICH.

The use of the phenolsulphonephthalein test of Rowntree and Geraghty[1] for estimating renal function has became quite widespread and were it not for the expense of the instruments for determining the percentage of phenolsulphonephthalein the test would enjoy even greater popularity.

The several instruments at present on the market (Duboscq, Autenrieth-Königsberger and Dunning colorimeters) are all reliable, but too expensive for the average practitioner. Acting on the suggestion of Drs. Cabot and Young[2] I have devised an instrument which is of simple construction and can be made at small expense. It has proved reliable and




**Colorimeter for Use in Phenolsulphonephthalein Test for Kidney Function;** *A*, wooden rack to hold test-tubes filled with dilutions of a standard solution of phenolsulphonephthalein; *B*, movable shield holding test tube whose phenolsulphonephthalein content is to be determined.

will give readings within 2 per cent., when compared with the Geraghty-Rowntree modification of the Autenrieth-Königsberger colorimeter, also when compared with known and measured dilutions of the standard solution.

The instrument consists of a wooden rack to hold 14 small test-tubes (12 x 120 mm., the size used for the Wassermann reaction). Fitting over the rack and sliding in a groove in base of rack is an upright shield-piece which has two oblong apertures to permit the passage of light through the test-tube in the rack, and a second test-tube which is held in the shield and which contains the specimen whose phenolsulphonephthalein content is to be tested. The remainder of the shield, on either side, protects the observer from side light interfering with accurate matching of the colors in the test-tubes. The test-tubes in the rack are filled with varying percentages of the phthalein, from 5 to 70 per cent. The dilution is made from a standard solution of 6 mg. of phenolsulphonephthalein to one liter of distilled water, to which is added sufficient sodium hydrate (10 c.c. of 5 per cent. solution or a few cubic centimeters of concentrated solution) to bring out the color of the dye and to render the solution more permanent. It has been found of advantage to use chemically pure rubber corks and paraffin in sealing the tubes, as ordinary corks tend to discolor the solution. With ordinary care, and preventing the color tubes from being exposed to direct sunlight for long periods, there will be little if any fading of the color and this simple apparatus will give excellent service.

The method of estimating the quantity of phenolsulphonephthalein excreted, using this colorimeter, is the following:

Dilute the specimen of urine to about 200 c.c. with water, and render alkaline by adding 10 c.c. of 5 per cent. solution of sodium hydroxid and the further addition of water to make it measure 1 liter. With this dilution fill a test-tube the same size as used in the rack and place in front of aperture in shield; then by moving shield along the rack to a point where a color tube in the rack most nearly matches the specimen, the percentage of this color tube will correspond to that of the specimen tube and represent the percentage of the dye (phenolsulphonephthalein) secreted.

Occasionally it is found that after adding the sodium hydroxid to the specimen the coloration is slight; the dilution should then be made to 500 c.c. instead of 1,000 and the percentage reading divided by 2. Directions for application of test and phenolsulphonephthalein in sterile ampoules (containing 6 mg. to 1 c.c.) may be obtained from Hynson, Westcott and Company, Baltimore.

Grand Rapids Clinical Laboratory.

1. Geraghty, J. T., and Rowntree, L. G.: The Phenolsulphonephthalein Test for Estimating Renal Function, THE JOURNAL A. M. A., Sept. 2, 1911, p. 811. Rowntree, L. G., and Geraghty, J. T.: The Phthalein Test, Arch. Int. Med., March, 1912, p. 284. Geraghty, J. T.: A Study of the Accuracy of the Phenolsulphonephthalein Test for Renal Function, THE JOURNAL A. M. A., Jan. 18, 1913, p. 191; The Value of Renal Functional Tests to the Surgeon and the Limitations of These Tests, New York Med. Jour., Aug. 15, 1914.

2. Cabot, H., and Young, E. L.: Phenolsulphonephthalein as a Test of Renal Function, Boston Med. and Surg. Jour., Oct. 12, 1911, p. 549.

## A CONTROLLER OF THE TONGUE AND PALATE DURING GENERAL ANESTHESIA*

JOSEPH E. LUMBARD, M.D., NEW YORK
Instructor in Anesthesia, University and Bellevue Hospital Medical College; Anesthetist to Harlem, Knickerbocker and Lying-in Hospitals

It is of great importance to maintain an unobstructed air way during the administration of a general anesthetic. The prevention of obstruction to free breathing through the upper air passages is one of the most important details with which the anesthetist has to cope. The most common form of respiratory obstruction, during anesthesia, is the falling back of the tongue into the pharynx, owing to the relaxation of the muscular support.

There are several instruments to overcome this difficulty, known as air ways, breathing and pharyngeal tubes. Those best known are the tubes devised by Hewitt of London and Connell of New York. Both give excellent results, but are open to the great objection of becoming obstructed with mucus.

To overcome this I have devised an instrument which consists essentially of a double row of four bent wires, running parallel, about an eighth of an inch apart, and firmly held together by wire bands, two at each end. The instrument measures 5½ inches in length, three-fourths inch in width and one-fourth inch in thickness: It presents a double curve which adapts itself to the dorsum of the tongue. The instrument is easily introduced, by placing the pharyngeal end between the tongue and the soft palate, until it rests in the pharynx. No attempt should be made to do this until the patient is well anesthetized. The use of the instrument is

**Lumbard's controller of the tongue and palate for general anesthesia, thirteen-twentieths actual size. The pharyngeal end is at the left.**

also indicated in obstructions of the nose and mouth. It obviates the barbarous methods of tongue retraction and jaw holding, and an instrument of this nature should be considered as an essential part of every anesthetist's outfit.

### ADVANTAGES

1. It is easily and quickly introduced. No mouth-gag or manipulating of the tongue are necessary.
2. It will not clog with mucus, which is the chief defect of similar instruments.
3. It is easily kept in position.
4. It is quickly cleansed.
5. It will not conduct a fluid anesthetic to the throat, an accident that is liable to occur with other instruments.
6. It cannot be compressed by the teeth or gums.

1925 Seventh Avenue.

* Shown at the New York Academy of Medicine (Section on Surgery), March 5, 1915.

## Special Article

# PRACTICAL PHARMACOLOGY *

(Continued from page 1657)

## XX

## CIRCULATORY DEPRESSANTS

It is well known that, though the blood-pressure undergoes frequent minor changes, it is under the control of a coordinated mechanism which tends to maintain a close approximation to a certain level from day to day during health. Even after the administration of drugs which affect the distribution of the blood, any considerable change in blood-pressure is usually only fleeting. When the vessels of the splanchnic region are constricted, those of the periphery usually undergo a compensating dilatation; if the constriction of the splanchnic vessels is sufficient to cause a rise of blood-pressure, the heart is commonly slowed, so that the pressure in the large arteries tends strongly to remain constant.

The blood-pressure may be lowered by diminishing the amount of blood in the circulation; by dilating the vessels, or by diminishing the activity of the heart by decreasing either its force or its rate.

Venesection, or bleeding, was formerly employed widely, but this has fortunately fallen largely into disuse. Drastic cathartics were also used at one time somewhat more freely than at present; diaphoretics and diuretics remove liquid too slowly to be satisfactory in those emergencies in which vasodilators are commonly used. The blood tends strongly to maintain a uniform concentration, and when much fluid is removed by diuretics or diaphoretics this is largely replaced in the circulating blood by fluid drawn from the tissues.

There is an even greater tendency on the part of the vasomotor mechanism to compensate for changes induced in the vessels of different areas, and the vasodilators often exert only an inconspicuous and brief influence on the general blood-pressure.

The rate of the heart-beat is influenced by many factors which tend to regulate it according to the demands of the circulation. Consequently, the heart often responds to the systemic actions of drugs in a manner directly opposite to that which would result from the action on the heart alone.

### VASODILATORS: THE NITRITES

Therapeutic doses of many drugs cause dilatation of the vessels of certain areas, and many cause general vasodilatation when toxic doses are given.

Attention has been called to the dilator action of the antipyretics on the vessels of the skin whereby they promote sweating and the elimination of heat. They are not used to lower the general blood-pressure, however, even though this does result from their collapse action.

Alcohol also causes dilatation of the peripheral vessels even with small doses, and it was used formerly to lower blood-pressure. Toxic doses of hydrated chloral cause a marked vascular dilatation, and it is commonly stated or implied that therapeutic doses also lower the blood-pressure. Any such action, however, is commonly incidental to its narcotic effect and not due to its vasodilator action, which is unimportant except with toxic doses.

Guthrie is credited with having been the first to observe the effects of the nitrites in causing flushing of the face. Lauder Brunton is chiefly responsible for their introduction into therapeutics about 1867, after he had observed the effects of amyl nitrite on a patient who suffered from anginal attacks.

Tracings of the pulse taken by him after the administration of amyl nitrite during one of these attacks do not show any essential difference from tracings of the normal pulse, the amyl nitrite having overcome the vasoconstriction which accompanied the attacks.

The actions of the several nitrites, including amyl nitrite, glyceryl nitrate or nitroglycerin, which acts as a nitrite, and sodium nitrite, are qualitatively quite similar, though they differ somewhat in duration.

The nitrites have little direct action on the higher parts of the brain, except for the dilatation of the cerebral arteries. This is attended with a sense of fulness in the head and diziness, with some disturbance of the special senses, and often with headache.

The effects on the medullary centers are direct and indirect, but it is not easy to determine which of these is the more important in some cases.

The vasomotor centers are certainly depressed after the administration of small doses of the nitrites, but this depression is probably not alone responsible for the vasodilatation which results, especially after large doses. The vessels of the face and neck—the so-called blush area—are affected first, and the vessels of the skin of the upper part of the body in general appear to dilate before the splanchnics, but these also participate in the effects of therapeutic doses.

There has been a good deal of discussion concerning the seat of the dilator action of the nitrites, and some authors attribute the effect almost entirely to the action on the musculature in the vessel walls, while others consider this wholly secondary and attribute the effect mainly to the depression of the vasomotor centers.

The question is of more than purely theoretic importance, because it is frequently stated that the nitrites have an especial action on the coronaries. It seems probable that they have no specific action on the coronaries, but that the benefit which they confer in conditions attended with high blood-pressure is due mainly to the relief of an overburdened heart by diminishing the resistance. Attention has already been called to the physiologic necessity for the coronaries to respond to increased cardiac action with dilatation when other arteries are constricted, from which it is evident that they do not behave toward all agents in the same way that other arteries do.

It is uncertain whether the nitrites have any important direct action on the other medullary centers, though the functions controlled by these centers show active changes. It is sometimes stated that the vagus is depressed, leading to an increase in the heart-rate. The heart, however, responds normally to lowered blood-pressure by an increase in the rate of the beat.[1]

* This is the twentieth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

1. The tone of the vagus depends to a great extent on the blood-pressure in the medulla, and when this falls, the lowered vagus tone permits of acceleration through the action of the accelerator center. The delicacy of this regulating mechanism in the dog is such that it is extremely difficult at times to cause a notable fall in the blood-pressure by administering amyl nitrite to that animal, the heart becoming much faster with a slight fall. The rabbit lacks this delicate control and amyl nitrite causes a prompt fall of the blood-pressure.

V. 191

and it is not probable that vagus depression is due largely to the direct action of the nitrites. At any rate, it is important to remember that the heart is not injured by therapeutic doses of the nitrites, since these are used in precisely those conditions in which the heart suffers from overexertion.

After the administration of amyl nitrite the respiratory center behaves as it does during fall of blood-pressure from other causes, that is, it responds to the stimulation of carbon dioxid (or lack of oxygen), and increased respiration results. There is no reason to suppose that the nitrites stimulate the center directly.

The text-books state that enormous doses of the nitrites result in the formation of methemoglobin. This does not occur, however, with doses such as are used therapeutically; it is of no interest to the clinician, except in possible cases of poisoning.

Other smooth muscle beside that of the arterioles is depressed by the nitrites, and spasm of the bronchial muscles is said to be relieved by the fumes from the burning of potassium nitrate mixtures, which contain nitrites.

The nitrites cause venous dilatation, and this probably contributes somewhat to the fall of blood-pressure, by providing reservoirs for the blood.

The nitrites are oxidized in the body and appear in the urine chiefly as nitrates.

In addition to the effects of nitrites which have been discussed, other secondary effects will be observed at times,[2] but these are inconstant, and are to be explained by the differences in the distribution of the blood which are seen at different times. If the renal vessels are dilated to a disproportionately greater extent than those of the general circulation, there may be an increased secretion of urine, but diuresis in such cases is not to be attributed to any direct action of the nitrites on the kidneys.

### ACONITE

The actions of aconite are those of its principal alkaloid, aconitin, but tincture of aconite is used much more frequently than the alkaloid, because of the difficulty of obtaining aconitin of constant activity, and because of the mechanical difficulties involved in the use of a drug of such extraordinary potency.

The actions of aconitin on the central nervous system are difficult of analysis, but these consist of stimulation and subsequent depression.

The heat-regulating center (if we may refer to the coordinating mechanism as a center) seems to be influenced by aconitin in the same way in which it is by the antipyretics, and aconite has a distinctly antipyretic action.

The vagus center is stimulated, and Cushny states that aconitin affords one of the best means of obtaining pure slowing of the heart. Fatal doses affect the heart partly through the vagus, and it is stated that larger doses of aconitin are survived if atropin be given than without it.

Aconitin stimulates the respiratory center, but this shows a strong tendency to become depressed, and death from aconitin frequently results from paralysis of the respiratory center. So great is the tendency of aconitin to cause depression that it cannot be used therapeutically as a respiratory stimulant.

Vomiting often occurs late in the state of poisoning, this being due to stimulation of the vomiting center (unpublished experiments).

The direct action on the vasomotor centers does not appear to be constant, and there may be either reflex stimulation or depression, but there seems to be some evidence that vasodilatation is the more common effect of aconitin action.

The effect of aconitin on the heart is due to vagus and accelerator stimulation and to the direct action on the heart itself. There is apparently a brief period during which the heart beats more energetically because of accelerator stimulation, but this is unimportant, and with the slowing from vagus stimulation there is no corresponding increase in the strength of the contractions, so that less blood is expelled from the heart in a unit of time, and in consequence the blood-pressure falls. With severe poisoning from aconitin the heart becomes very irregular; in fact, various forms of irregularity are seen in the exposed heart of an animal poisoned with it, the heart finally stopping in diastole. It is more than possible that aconitin causes a fall of blood-pressure through its combined actions on the cardiac muscle, the vagus center and the vasomotor centers.

Aconitin causes tingling when applied to the tongue or to the skin in such a way that it penetrates to the sensory nerves, and when large doses have been taken this tingling is manifested in the same way as after local application. It is one of the most typical symptoms of aconite poisoning, and usually serves to call the patient's attention to something being amiss in such cases.

Aconite was formerly administered therapeutically to the point of commencing tingling in the fingers. The sensory stimulation is followed by anesthesia, but this action is much less pronounced with aconitin than with cocain, or even than with atropin, to both of which aconitin is closely related chemically.

Aconitin is absorbed rapidly from the alimentary canal, and, to some extent, from the unbroken skin when applied in the form of an oleate or liniment.

Poisoning by aconite is not rare, but less frequent perhaps than formerly, when aconite was widely used for a great variety of complaints.

Absorption takes place so rapidly that there is usually little time for treatment after a fatal dose has been swallowed. Tingling and irritation of the mouth and throat are observed soon after the poison has been taken. This is due to the local action, and soon after the poison is absorbed the tingling is felt in the fingertips, and later over a large part of the body. Nausea, vomiting and diarrhea may occur. The respiration suffers severely as well as the circulation, and death probably results from a combination of the actions on the heart and the respiration.

Of course, any poison remaining unabsorbed should be removed from the stomach by washing; atropin is said to be antidotal, but it is probably of limited value in most cases, and artificial respiration would be preferable to the atropin action on the respiratory center.

2. The question has been raised frequently whether the small amounts of nitrites present in flour bleached by the several processes in common use are injurious to health and whether flour bleached in this way is less digestible than unbleached. There is no evidence that minute amounts of nitrites are injurious, and it cannot be said that the flour so bleached is less digestible than the unbleached, but on the other hand, we are unable to say that small amounts of the nitrites continued over long periods are without deleterious influence on the health, and there still remains the larger subject on which there can be no discussion, that bleaching is often employed for fraudulent purposes.

A single dose of 1 mg. (1/60 grain) of atropin may be given, and repeated once if it causes improvement in the respiration or if it fails to abolish the vagus influence on the heart.

The patient is kept as quiet as possible, and heat is applied to the body.

Tincture of aconite probably undergoes deterioration when kept long, and dogs sometimes withstand enormous doses even when these are injected intravenously. It is probable that the fatal dose of pure aconitin for a man is only a few milligrams.

### THERAPEUTIC USES

The nitrites are used, as already indicated, for reducing blood-pressure. Amyl nitrite finds its especial field of usefulness in giving relief in attacks of angina pectoris, in which it is often supposed to abolish spasm of the coronary arteries. It seems much more probable that amyl nitrite relieves this distressing and even terrifying condition by abolishing the excessive resistance against which the heart contracts.

It may be used to relieve any pain which is due to arterial spasm, to prevent or relieve epileptic convulsions, and in bronchial asthma.

Amyl nitrite is sometimes used to stop hemorrhage when this results from the rupture of a vessel in the lungs, brain or elsewhere through very high blood-pressure, but it is apt to do harm if the hemorrhage has progressed to the point that the general arterial pressure is already low. Owing to the brevity of its action it is unsuited to those conditions in which a prolonged effect is necessary.

Nitroglycerin is used much like amyl nitrite, but its action is not induced instantaneously as that of amyl nitrite is, and it is therefore employed where a slower and somewhat more lasting action is desired, as in the high blood-pressure of arteriosclerosis and of nephritis, as well as between the attacks of angina pectoris.

It is sometimes used with digitalis with a view to overcoming the reputed vasoconstrictor action of the latter. It has been brought out in the discussion of digitalis actions that this direct vasoconstrictor action is negligible, and that digitalis may actually cause a fall of blood-pressure when this was previously abnormally high.

It is probable that nitroglycerin is seldom of any benefit in influencing the action of digitalis.

Sodium nitrite is used for exactly the same purposes as nitroglycerin, and it probably has no advantages over the latter.

Erythrol tetranitrate (for description see New and Nonofficial Remedies) is used for the same purposes as nitroglycerin, over which it has the advantage of exerting a more prolonged action. It is very expensive, and is said to be even more prone than nitroglycerin to cause severe headache.

The vasodilator actions of alcohol have been referred to; spirit of nitrous ether has a feeble vasodilator action, and is used to promote diuresis and diaphoresis.

In some cases the splanchnics appear to be incapable of dilating in response to the action of the nitrites, and in such cases the slight fall in the blood-pressure, and probably some direct depression of the vagus center, result in such an increase in the heart-rate that the fall is converted into a temporary rise of pressure.

Aconite is used occasionally as an antipyretic and diaphoretic in fever patients of sthenic type, or early in other febrile conditions — not late during protracted fevers, such as typhoid. It may be used cautiously when it is desired to reduce the blood-pressure, if the heart is in good condition. There is little scientific basis for its continued internal use in therapeutics.

It is used externally in the form of liniments and ointments for the relief of neuralgias. Absorption may occur from the unbroken skin, and it should be used only with caution. It should not be applied to mucous membranes, from which it is absorbed promptly.

Veratrum viride is sometimes used for the reduction of the extremely high blood-pressure often seen in eclampsia. While good results have been reported in some cases, the action of the drug is not sufficiently understood to justify its use in general practice, and there is little reason to doubt that it sometimes precipitates a catastrophe in this dangerous condition. Veratrum viride is not recognized in "Useful Drugs," nor is it recommended here. It probably owes any popularity which it has to its former exploitation as a proprietary preparation under the name of "Norwood's Tincture."

### DOSAGE

Amyl nitrite is commonly used in the form of glass capsules, or "pearls" containing from 0.2 to 0.3 c.c. (3 to 5 minims). These are carried about by the patient, and at the approach of an attack one of the "pearls" is broken in the handkerchief and inhaled.

Amyl nitrite is sometimes sold in sealed glass containers holding about 25 gm. (1 fluidounce).[3] These tubes should never be grasped in the bare hand. Before being opened they should be cooled, and wrapped in several folds of a towel loosely; the operator, when filing the neck, should point the tube away from his face.

Nitroglycerin being explosive, is commonly used in the form of the spirit or in tablets. The average dose of spirit of nitroglycerin is 0.05 c.c. (1 minim), which is to be repeated several times daily when it is desired to maintain the effect. It gradually loses its capacity for lowering the blood-pressure, owing to the development of habituation, and the intensity of the headache which it frequently causes is a great disadvantage in its use.

Spirit of nitrous ether, popularly used as a diuretic, has, to a limited extent, the vasodilator action of other nitrites, but is now seldom used. The average dose is 2 c.c. (30 minims).

The dose of sodium nitrite is about 0.05 gm. (1 grain) repeated several times daily. It is always administered in solution, but it is prone to undergo oxidation with the formation of the nitrate; hence only enough of the solution should be prepared to last a short time.

Aconite is almost invariably administered in the form of the tincture, of which the dose is 0.2 c.c. (3 minims) repeated every hour until the desired effect is produced. Smaller doses may be given with correspondingly greater frequency.*

3. The following experience may be of interest: The neck of one of these tubes was filed with the intention of opening it, when it exploded violently; a second tube was cooled in a freezing mixture of salt and ice, and the neck then filed; there was a severe explosion; several tubes were then opened after wrapping them in towels, but in every case explosions of extreme violence resulted. The makers are well-known chemists, but they have been unable to explain the extreme violence with which these tubes exploded.

* Owing to lack of space the materia medica of this group is omitted from THE JOURNAL. It will be included when this series is published in book form.

## DIURETICS

The secretion of urine may be influenced by drugs in many different ways; hence the diuretics do not constitute a well-defined group, and in fact, few of them are used as diuretics exclusively. Some of the diuretics have been discussed among other groups, and others will be discussed elsewhere.

Sollmann[1] classifies the diuretics as follows:

1. Those acting through changes in the general circulation.
2. Those acting purely by local irritant stimulation of the kidney cells.
3. Those acting by non-irritant stimulation of the kidney cells.
4. Those acting mainly by salt action.

Under normal conditions the rate at which the urine is secreted varies with the volume of blood which passes through the kidneys in a unit of time, but there is a minimum blood pressure (about 40 mm. of mercury), below which the kidneys do not function. On the other hand, intense constriction of the renal arteries causes a diminution of the secretion even though the general blood pressure may remain high.

### DIGITALIS BODIES

The actions of the digitalis bodies have been discussed and it is necessary to call attention here only to the fact that they cause diuresis by improving the circulation. There is no evidence that they act on the kidneys directly, and in fact they do not cause diuresis in healthy man, since they do not improve the normal circulation.

### VASODILATORS

While our knowledge of the actions of the vasomotor nerves in controlling the circulation is considerable, we do not know much about the changes which drugs cause in the renal circulation under different conditions, unless they induce diuresis, which may be accepted as evidence that the circulation has been improved. But improvement means only a closer approximation to normal conditions, since either vasodilation or vasoconstriction may interfere with the secretion.

We may conclude then that the vasodilators will facilitate the secretion of urine when they abolish an excessive constriction of the renal arteries without causing too great a fall in the general blood pressure, but we are unable to state in what cases this beneficial effect will follow their use. The nitrites and other vasodilators have been employed in many cases in which they could hardly be of benefit, for example, they have been recommended frequently to overcome the vasoconstrictor action of the digitalis bodies, but, as we have already pointed out, the *direct* vasoconstrictor action of therapeutic doses of the digitalis bodies is wholly negligible, and when an improvement in vascular tone follows their use it is due to the general improvement in the circulation, and does not call for vasodilators.

It is hardly probable that the vasodilators can often have any important action in promoting diuresis, but the indications for their use in any case may be deduced from the discussion of their actions.

The drugs of the caffein group influence the general circulation but their most pronounced diuretic action is exerted on the kidney directly.

1. Sollmann: Pharmacology, Philadelphia, W. B. Saunders Company, 1906, Ed. 2, p. 546.

### IRRITANTS

The second class of drugs—those which act through their local irritant action on the renal cells—embraces the volatile oils, which have been mentioned under urinary disinfectants, and certain glucosidal bodies, such as scoparin, and some others which are not used therapeutically for their diuretic action.

The most important drug usually classed among the irritant diuretics is calomel. There is no question that large doses of calomel are capable of causing renal irritation, hence caution is urged when it is employed in nephritis, and some authorities state that it should not be used when there is the least suspicion of nephritis. That view would appear to be extreme, however.

An entirely different theory has been advanced recently to account for the diuretic action of calomel. It causes increased peristalsis in the small intestine resulting in a lessened absorption, and consequently in the emptying of a larger amount of fluid into the colon than normally. It is explained that calomel does not affect the large intestine markedly, and the excess of fluid in the colon undergoes rapid absorption. In the meantime the composition of the blood has been restored to the normal through the withdrawal of fluid from the tissues to compensate for that excreted into the small intestine, and this rapid absorption of fluid from the large intestine induces hydremia and consequent diuresis. It is urged that the copious diuresis which accompanies the absorption of small amounts of calomel prevents the latter from exerting its irritant action on the renal cells.

It is a matter of common experience that calomel diuresis is attended with greater improvement in the condition of dropsical patients, than is seen when it causes the removal of water by purgation.

There is no apparent advantage in securing the absorption of water from the colon only in order that it may be excreted by the kidneys, hence we must suppose that the advantage is due to a milder action whereby the sudden removal of a large amount of fluid from the circulation is avoided.

The combination of opium and calomel causes diuresis more certainly than does calomel alone, and this is explained on the basis that the delayed peristalsis permits of a greater absorption of calomel, or according to the view of calomel action just discussed, it permits of a greater absorption of water from the large intestine.

### WATER

Several investigators have found that a given amount of water administered by the mouth causes a greater diuresis than an equal amount injected intravenously or subcutaneously. It has been suggested that some substance which is actively diuretic, is absorbed with the water from the intestine, and that it is the absence of this hypothetic substance in the circulation which accounts for the slighter diuresis when the water is injected intravenously. It is probable that the diuretic action of calomel may stand in relation to this observation.

### CAFFEIN GROUP

The drugs of the caffein group are the only ones of importance which induce diuresis through their non-irritant stimulation of the renal cells.

We have called attention to their influence on the heart, and on the vasomotor system, and it remains to discuss their specific action on the renal cells.

It is generally held that they act on the tubules, stimulating them to increased secretion, but there is another theory of their action which is diametrically opposed to this view, according to which caffein inhibits the capacity of the tubules for reabsorbing water, with a consequent increase in the amount eliminated.

Whichever theory is correct, the essential fact for the clinician is that caffein and theobromin act on the kidneys and do not cause irritation, hence they may be used in the presence of nephritis.

It is sometimes maintained that these agents cause a specific dilation of the renal vessels, but the vessels of every organ dilate when it begins to function more actively, and it is impossible to say whether the renal dilation is the cause or effect of renal activity.

### OTHER MEANS OF CAUSING DIURESIS

The rate of secretion of urine varies with the viscosity of the blood, and anything which causes water to pass into the circulation tends to promote the secretion of urine. This may be accomplished by causing water to be absorbed from the body tissues or from the alimentary tract.

The absorption of tissue fluids into the circulation may be accelerated during health by the intravenous injection of a saline solution which has a higher concentration than the blood. The renal cells offer little resistance to the passage of sodium sulphate, and when a 2 per cent. solution is injected intravenously, tissue fluid passes into the circulation and active diuresis is induced. This is one of the most active diuretics at our command, and may be depended on to hasten the elimination of those poisons which are excreted by the kidneys. Obviously, this method is only suited for emergencies.

Venous stasis favors the passage of water from the blood into the tissues, and conversely, the relief of venous stasis is commonly followed by the return of the water from the tissues into the circulation, with the resulting hydremia and diuresis.

Even a comparatively small initial change of this sort may institute diuresis with the ultimate elimination of enormous quantities of water with progressive improvement in the circulation and relief of the stasis; hence any drug which causes improvement in the general circulation in dropsical conditions will act as a diuretic if the kidneys are capable of functioning.

Owing to the slight absorbability of sodium sulphate by the intestinal epithelium it does not usually pass from the intestinal tract into the circulation with sufficient rapidity to cause active diuresis, but the acetate and citrate of potassium are absorbed promptly and are commonly used as diuretics. They are also commonly used when it is desired to render the urine alkaline.

Potassium acetate is absorbed more readily than the citrate, and is therefore a more active diuretic; large doses of the citrate act as a laxative, and may then fail to produce diuresis, and may even diminish it temporarily, since the removal of water by the bowel will increase the viscosity of the blood.

### THERAPEUTIC USES

The urine serves to remove toxic substances from the body, whether these be waste products formed during health, the results of disease, or poisons introduced in the form of drugs, though not all toxic substances are removed in this way. From this the chief uses of the diuretics in normal circulatory conditions are obvious. When the circulation is impaired and water accumulates in the tissues, it causes distress, and its removal becomes imperative. This may be accomplished in part by sweating and purgation, but diuresis affords the most satisfactory method of disposing of the accumulations when the kidneys are capable of functioning normally.

It is not feasible to consider all of the therapeutic indications for diuretics, and only a few of them will be discussed here.

We do not know enough about the toxic substances (toxins) which are formed during disease and the best method of securing their elimination to enable us to state just what measures should be employed, and therefore we do not know to what extent the use of active diuretics will prove beneficial in many cases. We know that certain vegetable poisons at least are excreted practically unchanged in the urine, while others are decomposed to a greater or less extent before they are eliminated, and still others are removed from the circulation by the liver, and exert practically no effect on the kidneys, and their elimination is practically unaffected by diuresis.

Our knowledge of the fate of many of the vegetable poisons is fragmentary, and we are often unable to state whether they are eliminated by the kidneys, or by the liver, or are destroyed in the organism.

Even in those cases in which we know that a poison is eliminated by the kidneys, we are seldom able to state whether it is excreted through the glomeruli or through the activity of the tubular epithelium, hence we do not know which of the diuretic drugs is to be preferred in a given case. Fortunately, diuresis, however induced, appears to favor the elimination of many of those poisons which are excreted through the kidneys, and the necessity of choosing one diuretic rather than another does not appear to be pressing, and in cases of acute poisoning by a drug such as strychnin, which is excreted mainly by the kidney, and when the necessity of securing its rapid elimination is urgent, one's efforts should be directed toward inducing copious diuresis by the most effective means at hand.

When poisons which are capable of inducing nephritis have entered the circulation, it seems probable that we should secure the largest possible flow of blood through the kidney vessels, as well as the most copious diuresis; hence caffein and theobromin, which are said to cause a specific dilation of the renal vessels, probably deserve consideration in addition to other diuretic measures.

It is surprising how little attention has been paid to the possibilities of extreme diuresis and flushing of the kidneys to the maximum in cases of poisoning with mercuric salts, which have become all too common of late, but it is not to be understood that this subject has been wholly neglected, and diuresis does play an important rôle in the treatment in such cases. We do not believe that the possibilities of the treatment have been appreciated, however, just as the possibilities of the elimination of strychnin during intense diuresis have been overlooked, even though every text-book mentions diuretics as a part of the routine treatment in such cases.

The choice of diuretics in a given case is often empiric though there are certain conditions which demand a definite method of procedure.

When there is an accumulation of water in the tissue (dropsy) due to the faulty action of the heart and

its failure to maintain an adequate circulation, the digitalis bodies are of the first importance, and their action may be supplemented advantageously by that of caffein. Since it is necessary to rid the body of water it would evidently be improper to secure diuresis through the administration of large amounts of fluid. The different drugs of the digitalis group contain irritant principles and it is barely possible that some of these may induce diuresis after the manner of the second class mentioned above, that is, those acting purely by their irritant action on the renal cells, but, on the other hand, the absence of diuretic action during health from these agents, and the fact that they do not cause diuresis in dropsical conditions unless they improve the circulation through their cardiac actions, is strongly indicative of their acting as diuretics only through the changes in the general and renal circulation. The irritant digitalis principles are probably excreted almost entirely through the liver, and when they are excreted through the kidney this appears to take place so slowly that they are never in sufficient concentration to cause severe irritation. At any rate the digitalis bodies do not cause serious renal irritation and they are used in the presence of nephritis.

The action of the digitalis bodies may be supplemented by diuretics which cause dilation of the renal vessels (caffein), or by those which cause hydremia (calomel, potassium acetate).

Just as digitalis bodies are indicated when the cardiac action is impaired, so they are contra-indicated when the heart beat is normal, and in such cases dependence should be placed in drugs which diminish the viscosity of the blood, or those which act on the kidneys directly when diuresis is desired.

There is seldom any special indication for the use of the volatile oils as diuretics alone, but they are sometimes used in small doses which produce only a mild stimulation of the kidney cells.

The injection of physiologic salt solution commonly causes a marked diuresis, but the kidney may become resistant to the passage of sodium chlorid as the result of continued administration or under pathologic conditions, in which case the administration of salt leads to a diminution of urinary secretion. It then becomes necessary to reduce the ingestion of salt to a minimum. Attention has been called recently to the slow intravenous injection of hypertonic solution of glucose when sodium chlorid is contra-indicated.

Venous engorgement involving the abdominal veins which results from cardiac insufficiency, interferes with the renal circulation by retarding the outflow, and, as is very well known, anything that interferes with the free outflow from the renal veins interferes with the secretion of urine. Hence anything which relieves the venous stasis promotes the secretion of urine.

Active cathartics which remove a large amount of water may suffice to relieve the interference with the renal circulation. In like manner dropsical accumulations may interfere mechanically with the venous return and thereby lessen the secretion of urine, and in an analogous manner the purgative sometimes affords relief by removing the water which presses on the veins.

Clinicians often experience great difficulty in removing accumulations of fluid in patients who suffer with renal insufficiency. The retention of urea in nephritis is so well known as to require no further comment.

Saline diuretics and drugs of the caffein group are said to be best for use during chronic nephritis.

### DOSAGE

The dosage of the digitalis bodies has been discussed in the article dealing with cardiac drugs.

The dosage of caffein and theobromin for inducing diuresis is commonly limited by its actions on the heart and central nervous system, especially in the case of caffein by its tendency to produce wakefulness, and in the case of theobromin by its action on the heart.

The diuretic dose of caffein is usually given as 0.3 gm. (5 grains) but the drug is commonly given up to the limitations imposed by its side actions. It may be repeated about three times a day. Theobromin is given in about the same amounts, but owing to the more rapid action it may be repeated about four times a day.[2]

The volatile oils are seldom administered alone for their diuretic action, but they are sometimes used in the form of infusions, or other preparations of drugs which contain them.

The dose of potassium acetate is about 2 gm. (30 grains). It is commonly used when it is desired to increase the urine and render it alkaline, and the dose may be repeated every two or three hours until the desired object is attained. It is converted into the carbonate, in which form it is excreted largely.

Calomel is given in doses of from 0.1 to 0.2 gm. (from 1½ to 3 grains) several times daily when it is desired to cause diuresis. Since such doses cause diarrhea in most cases, it is often advised that opium be administered with it in sufficient amounts to prevent active purgation. This interferes with the evacuation of large amounts of water, and does cause diuresis in the manner described, but it is probably better to use smaller doses of calomel, and avoid the necessity of using opium. In many cases the removal of even a small amount of water by purgation will suffice to inaugurate an increased secretion of urine, and with a mild action one avoids the depression which is such an objectionable feature of violent calomel purgation. Small doses of calomel often cause purging with little more discomfort than accompanies a normal movement. The severe depression which accompanies calomel purgation is probably due in a large measure to the determination of an excessive amount of blood to the splanchnic region as the result of active intestinal secretion. Moderate action is not accompanied by this excessive activity of the intestinal glands and the resulting depression.

It seems probable that the combined use of digitalis, calomel and caffein or theobromin would be better than calomel with opium, except when the opium is needed for its other actions.*

*(To be continued)*

2. It seems probable that theobromin may be administered conveniently in the form of cocoa in sufficient amounts in many cases. It is often objected that this requires the administration of too much water, but every patient must have some fluid every day, and since cocoa should be made with milk only—not with water—there is no apparent reason why the cocoa should not be administered with the milk which forms an important part of the diet as a rule in such cases. The better class of powdered cocoas contain about 1 per cent. of theobromin, hence 10 gm. of powdered cocoa, sufficient for one cup, would contain 0.1 gm. (1½ grains) of theobromin. If desired, the theobromin administered in this way may be supplemented by theobromin or the theobromin and sodium acetate or salicylate. An advantage in the use of cocoa in this way is the reduction of the amount of sodium salicylate or acetate which it presents, and the lessened gastric disturbance.

* Owing to lack of space the materia medica of this group is omitted from THE JOURNAL. It will be included when this series is published in book form.

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## SENSATIONS OF GASTRIC ORIGIN

The classification and analysis of our sensations meet serious obstacles when we attempt to unravel the nature of those feelings through which a knowledge of the condition of the body and perhaps of ourselves as distinct from the external world is acquired. There is a group of organic sensations of movement and position, of pain, fatigue and less definite sensations of the visceral organs, which furnish subjective information regarding ourselves as things apart from the objects which surround us or the changes which excite our exterior senses. Important as the psychologic significance of these sensations projected into the interior of the body is in the way of entering into and qualifying our judgments, the subject does not lend itself readily to popular discussion. Aside from vague suggestions of ill-defined localities which are furnished by the pain sense, the sensory data derived from the interior of the body are exceedingly meager at best.

The inaccuracy of localization which pertains to the sensations associated with the visceral organs is in part complicated by the reference of pain arising from them to other parts of the body, notably to certain areas of the skin. Experience teaches that the stomach is not sensitive to touch; otherwise we should all be more familiar with this organ than we are. There are times, however, when sensibility of some sort is present. What is the solution of this seeming paradox?

Professor Carlson[1] of the University of Chicago concurs, with other investigators who have examined cases of fistula in the human stomach, in the conclusion that stimulation of the normal gastric mucosa does not produce tactile sensation. Gently touching or striking the mucosa with blunt objects produces no sensation. The indefinable feeling noted when more vigorous manipulation is employed is not like touch or pain or hunger, and is presumably associated with some outlying visceral part. Carlson believes that the sensation of pain cannot be produced from the normal gastric mucosa by any stimulation confined to the mucosa itself. Pinpricks or incisions of the normal mucosa do not seem to affect consciousness in any way. It does not follow that pain may not be caused by the stimulation of the hypersensitive mucosa. It is suggested that the gastric pain accompanying excessive inflation, gastric ulcers and chronic obstruction is due to the mechanical stimulation of hypersensitive nerves or nerve endings in the muscularis or submucosa by excessive distention or contraction. The nature of gastric hunger pains has already been discussed in THE JOURNAL.[2]

With respect to the recognition of temperature changes, the conditions in the stomach seem to be somewhat different. The evidence suggests that the mucosa is endowed with heat and cold nerve endings. The sensibility appears to be of the type which Head has termed protopathic, that is, of somewhat indefinite and "affective" character rather than "epicritic" and accurately localized. These fibers are undoubtedly more abundant and readily stimulated in the throat and esophagus than in the stomach; but the temperature sensations initiated by touching the gastric mucosa directly through a fistula with hot or cold solids cannot be referred to the esophageal membrane or to the skin of the abdomen. It is an interesting fact that heat and cold sensations are not confused, and that according to several investigators the cold sensation seems to be more distinct and better localized than the heat sensation.

The sensation of fulness does not originate in the mucosa of the stomach.[3] Its main source is the tension exerted from within on the circular muscular fibers of the stomach. A certain amount of tonus relaxation of the organ must be present before tension or pressure of the walls of the stomach produces the sensation of fulness.

Carlson has maintained for some time that hunger and appetite are qualitatively different sensations.[2] The sensory apparatus for hunger is distributed in the stomach wall and is stimulated by a certain type of contractions of the empty stomach. When foods or liquids are taken into the mouth and swallowed in the normal way, their main influence on appetite is via nerve endings in the mouth. In fact, the latter is so prominent that only by excluding it are we able clearly to distinguish the gastric factor. The memory factor in appetite is therefore preeminently gustatory and olfactory. Nevertheless the recent observations[1] on a subject with a gastric fistula indicate that chemical, and possibly mechanical, stimulation of nerve endings in the normal gastric mucosa gives rise to a sensation identical with appetite. This is the basis for

1. Carlson, A. J., and Braafladt, L. H.: Contributions to the Physiology of the Stomach, xviii, On the Sensibility of the Gastric Mucosa, Am. Jour. Physiol., 1915, xxxvi, 153.

2. The Call of the Empty Stomach, editorial, THE JOURNAL A. M. A., Oct. 4, 1913, p. 1300; The Voracity of Certain Diabetics, Feb. 21, 1914, p. 621; New Facts About Hunger, July 11, 1914, p. 169; Stomach Bitters, Jan. 2, 1915, p. 58; Water as a Gastric Stimulant, p. 59.

3. Hertz: The Sensibility of the Alimentary Canal, London, 1911.

the conclusion that the mucosa is endowed with a "protopathic" appetite sense. In weighing the uncertainties of such statements it must be remembered that they represent the results of subjective analysis, a debatable mode of investigation enforced by the necessities of the problem.

## WAR EXPERIENCES WITH INFECTED WOUNDS

The treatment of the bacterial infections of projectile wounds, founded on the experiences in the present war, forms the subject of an interesting memorandum[1] bearing the signatures of Colonels F. F. Burghard, Sir W. B. Leishman, F.R.S., Sir B. Moynihan and Sir A. E. Wright, F.R.S. The memorandum is issued for the guidance of members of the English army medical service in the treatment of wounds during the war, and it is expected, as soon as certain researches are completed, to follow it with additional memoranda on the employment of antiseptics and vaccines.

Among the most interesting observations made with regard to wounds, and particularly deep, penetrating wounds as made by shells in this war, is the notable difference between the reaction of sailors and soldiers. Sailors with the most severe type of wound, ragged, irregular, with uneven surface produced by herniated muscle and retracted severed fibers, usually have recovered promptly.[2] Soldiers suffering from even slight wounds have often had them contaminated with bacilli from the soil, particularly the anaerobes. This is a trench war; many of the trenches are dug through cultivated fields, and soldiers often cannot be removed from them for many hours after being wounded; contamination becomes almost inevitable. Large penetrating wounds made by shells under such circumstances have been particularly slow to heal, and septic complications have been frequent, severe and only too often fatal.

It was said at first that the sailors recovered promptly and satisfactorily in spite of the fact that many of them were subjected to immersion in cold sea water for from half an hour to an hour or more. Notwithstanding the shock thus inflicted, the reaction both in constitution and wound healing was excellent. Now the commission recommends the bathing of wounds with hypertonic salt solutions like sea water. Probably the exposure to sea water was actually remedial in its effects because the flow of lymph and serum induced in the wounded tissues actually obviated septic sequelae. The practical directions are:

"For ordinary use, the best application will be a 5 per cent. solution of common salt combined with 0.5 per cent. citrate of soda to render the lymph incoagulable. Where citrate of soda, or a similar decalcifiant is not available, a simple 5 per cent. solution of salt will serve. Sea water, this being equivalent to a 2.5 per cent. solution of salt, may also be employed. In dealing with dry and infiltrated wound surfaces, stronger solutions of salt (up to 10 per cent.) will be found to resolve the induration and to clean up the wound surfaces much more quickly than weaker solutions."

Where the wounds are deep and open, the simplest procedure is to pour in hypertonic salt solution and then plug lightly with gauze. Superficial wounds may be dealt with by laying on gauze thoroughly soaked in the solution. As these measures produce a very free flow of fluids from the wound, care must be taken to keep the bed and clothing from becoming perilously or even uncomfortably damp; therefore the limb should be wrapped in water-proof material. The memorandum adds that an application of petrolatum will prevent irritation of the skin and stinging on freshly cut skin surfaces. It is interesting to realize that this suggested method of treatment is actually a reversion to the idea of "drawing something out" of the system which used to be so familiar in connection with the use of poultices in the older generations, though, of course, poultices were usually applied to unbroken surfaces. The memorandum speaks of the "drawing agent" having done its work "as soon as it has checked the spreading invasion of the tissues, and cleaned up the dry and indurated wound surface and this last has clothed itself in bright coral red granulations. The hypertonic salt solution may then be replaced by some simple dressing."

Antiseptics have lost their prestige, but are now recommended because they help in the destruction of bacteria of various kinds in tissue débris which might cause infective processes in others or contaminate the hospital generally. If this precaution were omitted, infective microbes would inevitably be carried from one wound to another, and by such "passaging" there would almost surely "be bred out in the hospitals very virulent strains of microbes which would as in pre-Listerian days induce all manner of fatal septic infection. . . . Up to the present, experiment has not furnished anything in confirmation of the idea that the introduction of antiseptics into wounds would be likely to contribute to the arrest of suppuration." In a word then, while antiseptics used to be employed for the sake of the individual to whom they were applied, with the belief that they facilitated wound-healing, they are now recommended only because of the protection that they afford to others.

In conclusion, the memorandum suggests that when wounds are heavily infected, the ideal method of treatment, if only it were always practicable, would be immersion in a bath or continuous irrigation with some aseptic or mildly antiseptic fluid. When this continuous bath or, according to the conditions of the cases and the circumstances of the treatment, "the lymph

1. Burghard, F. F.; Leishman, W. B.; Moynihan, B., and Wright, A. E.: Memorandum on the Treatment of the Bacterial Infections of Projectile Wounds, Lancet, London, April 24, 1915, p. 873.
2. War Surgery, editorial, THE JOURNAL A. M. A., March 13, 1915, p. 912; The Bacteriology of the Wounds in the War, Jan. 30, 1915, p. 438.

lavage" induced by hypertonic salt solution has brought the infection under control, what remains of the infectious process may very often be extinguished by freely exposing the open wound to the air. In other words, two of Nature's simplest and most abundant materials, sea water and air, have come back as adjuvants in surgery. There has long been a tradition among sailors that washing wounds with sea water did them good, and on the farm, salt solution has often been employed in the treatment of wounds both of animals and of men. The feeling usually was that this old-time tradition probably had little basis of value in it, though now the experience of a great war would seem to indicate that the acute clinical observation of the older generations has enabled them to realize the value of applications of salt solution. As the true reason was misunderstood, their use gradually went out, or became limited only to popular medicine. As a reversion to older ideas in many particulars, this memorandum is significant in the history of medicine.

## INDOOR HUMIDITY

There is a widespread and growing belief in this country that the problems of ventilation are in need of exhaustive investigation. Some of the aspects of this subject, and particularly their bearing on hospital ventilation, have been discussed in detail in a series of papers in THE JOURNAL.[1] Physiologic research has brought about a new attitude in regard to what constitutes "foul air." The chemical composition of the atmosphere, its relative content of oxygen, carbon dioxid and other gaseous ingredients, are now of less concern to the hygienist than are certain other factors formerly looked on as somewhat incidental. The movement of the air, and its temperature and humidity now likewise call for careful attention and analysis. To a certain degree these features are interrelated and may properly be considered together.

Inasmuch as the temperature of the body is regulated by the loss of heat through evaporation of water from the lungs and skin, obviously the humidity of the environment of the body is of no small importance. The term "relative humidity" is used to express the ratio of the moisture actually present in a given space to the maximum amount which this volume can contain at the same temperature. At a temperature of 15 C. (59 F.) and with a relative humidity of 75 per cent. — a high figure — Pettenkofer and Voit estimated the loss of water by the lungs at 286 grams, and from the skin at from 500 to 1,700 grams daily. This will give some idea of the magnitude of the effects here concerned. If the relative humidity be increased, there will be a hindrance to the escape of water from the body; and when this condition of high relative humidity is combined with a high temperature of the air, the heat is far more oppressive than when the air is dry and allows free evaporation. Conversely, a cold, moist atmosphere may also be distressing.

The complexity of the question of humidity is well exemplified by the statement that very humid air, on the one hand, may prevent the comfortable escape of body heat by evaporation, whereas very dry air, especially when warm, is said to affect the mucous membranes injuriously. The foremost need at the present time is a mass of facts — something definite and tangible to guide the ventilating engineer. It is commonly stated that the air in our houses is too dry in winter, especially in cold weather. An American physicist[2] has called attention to the fact that most of the current household devices for humidifying the air of houses heated by the hot air furnace are entirely inadequate for this purpose. According to his calculations, a house containing 17,000 cubic feet of space would require, for a relative humidity of 40 per cent. at 70 F., with air already containing 20 per cent. humidity and changed once an hour, about 15 gallons of water a day. Rarely will the familiar water pans of American furnaces evaporate more than 2 or 3 gallons daily — hardly enough to raise the humidity 5 per cent.

Professor Ingersoll[2] of the University of Wisconsin has rarely found a humidity of less than 20 per cent. in buildings examined by him. Even allowing for moisture furnished by the exhalations of occupants and for such occasional sources as cooking operations, he maintains that many gallons of water must be evaporated daily in a moderate-sized house in cold weather to secure even 40 per cent. humidity. The latter figure is less than that given by medical writers as an ideal value. The relative humidity of outside air not infrequently passes the 80 per cent. level. Ingersoll found that when a humidity of 50 per cent. was produced by special devices, the condensation accompanying this value in cold weather proved unbearable. He concludes that for a temperature of about 70 F., which our heated rooms approach in winter, the ideal indoor humidity for winter in a climate such as that of Wisconsin is from 40 to 45 per cent. Seventy per cent. would mean the atmosphere of a steam laundry. According to Ingersoll, any recommendations of this value are either based on pure theory or else are founded on measurements with older forms of unreliable and inaccurate apparatus. Precisely wherein the hygienic advantages of a relative humidity of even 40 per cent. lie remains to be explained.

1. Bass, Frederic: Tests of Ventilating Plants, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1620. Winslow, C. E. A.: The Importance of Studying the Actual Condition of Hospital Air, Nov. 7, 1914, p. 1621. Miller, J. A.: Hospital Ventilation from the Point of View of the Clinician, Nov. 7, 1914, p. 1623. Lee, F. S.: Laboratory Experiments With Air, Nov. 7, 1914, p. 1625. Ohmes, A. K.: Hospital Ventilation from the Ventilating Engineer's Point of View, Nov. 7, 1914, p. 1628. Ventilation, editorial, Nov. 7, 1914, p. 1672; Temperature and Humidity in Hospitals, Oct. 25, 1913, p. 1541; The Ventilation Problem, Nov. 22, 1913, p. 1902.

2. Ingersoll, L. R.: Indoor Humidity, Jour. Home Economics, April, 1915, vii, 193.

## THE "LAW OF ANTICIPATION"

Numerous statistical studies of the inheritance factor indicate that insanity is gradually increasing. This increase has been attributed not alone to the more intense strain of modern life, but also to alleviation or temporary cure of mental derangements by appropriate treatment, thereby giving the mentally unfit a greater chance for procreation.

In contrast to these notions stands Mott's[1] "law of anticipation," derived from the study of a series of 217 pairs of father and offspring and 291 pairs of mother and offspring in which two or more members of the same family had been inmates of London county asylums. He found insanity appearing in 2 per cent. of the fathers and 4 per cent. of the mothers before 25 years of age, whereas among the offspring, 44 per cent. of the cases occurred before 25 years of age. The average age of onset of insanity was 50 years in the parents and 26 years in the offspring. Thus there was an antedating or anticipation of twenty-four years, the disease occurring, on the average, twenty-four years earlier in the children than in the parents. This so-called "law of anticipation" implies that when children of the insane become insane, they do so at a much earlier age than did their parents. They are also said to suffer from a more intense form of the disease. Mott lays great stress on this as Nature's way of ending or mending an unfit stock, and believes that there is a diminishing risk of the child of an insane parent becoming insane after he has passed 25 years. He even goes so far as to advise offspring of insane parents to marry if at 25 years of age they are mentally sound.

If the "law of anticipation" is a fact, it is evident that much of the present comment on the increase of insanity is unfounded and that many of the problems now confronting eugenists will, through Nature's provision, care for themselves. Since Mott's findings are contrary to conclusions drawn by many other statisticians, Heron[2] has undertaken a careful study of the method of compiling and the interpretation of these data.

He found that cases of insanity occurring before 20 years of age invariably appeared in the tables, whereas, many instances of insanity occurring in the offspring at 40 to 60 years of age escaped the records. Thus a false antedating results. No allowance was made for the mentally normal, at the time the tables were compiled, who in later years became insane. By directly comparing parent and child, one group, the parents, has been limited to over 20 years of age, making a marked error in favor of anticipation. Heron studied this manner of anticipation by means of the family histories of some of the ruling houses of the eighteenth century. In these records, every member of the entire family is accounted for. Among the fathers, none died under 30 years, while 87 per cent. of their children died under that age. The average death age of the fathers was 62, of the children 10, an anticipation of fifty-two years. None of the 294 fathers died before 20, but 106, or 36.1 per cent., of the 294 first-born children died before that age. This manner of selection, similar to Mott's, limits the age of the parental group to over 20 years, while more than one third of the offspring die under 20. This fallacy may be removed by contrasting the death rate of the fathers with that of the first son to marry and have a child. In 213 such instances, scarcely a year separates the age at death of father and son. Thus by removing artificial selection, all anticipation disappears. Further mathematical evidence tends to disprove the possibility of a "law of anticipation," and one must believe that such a law is not based on fact.

Mott's advice concerning marriage of offspring of insane parents has been criticized as unsound. Of the 500 offspring studied by him, 44 per cent. became insane before reaching 25 years of age. If 44 per cent. become insane before 25, 56 per cent. must become insane after this age, and therefore marriage after 25 is of greater risk than before.

The rise and fall of the "law of anticipation" serves as an illustration of fallacies which may occur in statistical studies. In the future such mistakes will happen less frequently since undoubtedly, twenty years hence, statistics will be a science unto itself and dealt with only by trained men.

1. Mott: Brit. Med. Jour., May 11, 1912, p. 1060.
2. Heron: Biometrika, 1915, x, 356.

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## PASTEURIZATION OF MILK AND THE COLON BACILLUS

Although the pasteurization of milk has become a familiar process in various parts of the United States and is highly lauded in many quarters as an admirable safeguard of the health of consumers, there still is considerable misconception regarding the results actually accomplished. The real function of pasteurization, that is, its actual effect on the milk involved, is not understood so adequately or accurately as it ought to be. Those least conversant with the underlying facts often believe that the procedure destroys all the micro-organisms present in raw milk; the results attained are confused with what is attempted in complete sterilization of milk by more vigorous methods. The more rational assumption, on which the current practices in general are based, is that pasteurization of milk, by heating it to a temperature of from 60 to 63 C. (140 to 145.4 F.) and holding it at this temperature for from twenty to thirty minutes, serves to destroy any bacteria of diseases regarded as transmissible by milk. The use of higher temperatures for shorter periods is now more generally avoided because it is believed that undesirable chemical changes are

more likely to take place in milk treated in this way, and more especially because higher heating destroys an undue proportion of lactic acid bacteria, while the spores of certain micro-organisms which decompose the proteins of milk are not destroyed. As a result, the milk may subsequently become unwholesome from putrefactive change before it becomes sour as a result of the acid-forming bacteria.

Realizing, then, that pasteurization is never expected to destroy all bacteria in milk, one is prompted to ask what margin of safety against survival of undesirable living organisms remains at the temperatures and during the periods currently advised for heating the milk. It is said that the presence of colon bacilli in pasteurized milk is generally interpreted as meaning either that the milk was not properly heated or that it was reinfected after pasteurization by careless handling. This interpretation is based on the low thermal death point of cultures of *Bacillus coli*. In the laboratories of the Dairy Division of the Bureau of Animal Industry at Washington, Ayers and Johnson[1] have ascertained the thermal death point of many cultures of colon bacilli isolated from numerous typical sources of contamination, such as the excrement of man and cattle, flies, milk, cream and cheese. The duration of the heating was fixed at thirty minutes for all the trials. At 60 C. (140 F.), the lowest pasteurizing temperature, ninety-five out of 174 cultures examined, or 54.59 per cent., survived; at 62.8 C. (145 F.), the usual temperature for pasteurizing, twelve, or 6.89 per cent., survived. One culture was not destroyed at 65.6 C. (150 F.) on the first heating, but in repeated experiments it was always destroyed. There is a marked difference in the effect of heating at 60 C. and at 62.8 C. Although there is only a difference of 2.8 degrees C., or 5 degrees F., 87.3 per cent. of the cultures which survived at 60 C. were destroyed at 62.8 C.

It is important from a practical standpoint to learn that 62.8 C. maintained for half an hour is a critical temperature for most colon bacilli. It seems desirable, however, to emphasize the fact that though there is a low "majority thermal death point," a few cells often may survive this. Under the circumstances pointed out, the thermometer needs careful watching, and the pasteurization process calls for intelligent execution in order to produce dependable results. The presence of a large number of colon bacilli immediately after the heating process may indicate improper treatment of the milk.

The government bacteriologists have reached the conclusion that if milk is pasteurized at a temperature of 65.6 C. (150 F.) or above for thirty minutes, they would not expect, from their results, that any colon bacilli would survive. Consequently, under such conditions the colon test for the efficiency of pasteurization may be of value. It must be remembered, however, that a study of more cultures may reveal strains of colon bacilli that are able to survive this and even higher temperatures.

1. Ayers, S. H., and Johnson, Jr., W. T.: Ability of Colon Bacilli to Survive Pasteurization, Jour. Agric. Research, 1915, iii, 401.

## THE COAGULATION OF THE BLOOD AFTER HEMORRHAGE

Variations in the clotting power of the blood are encountered in diverse manifestations of practical medicine. Not infrequently they are occasion for uncertainty and annoyance, particularly when conditions arise in which an inhibition of coagulation accompanies some hemorrhagic diathesis. Until the physiologic factors concerned in the coagulation of the blood are more clearly understood, it is almost unwarranted to expect any real progress in the management of the often serious situations created by certain types of uncontrollable hemorrhage. Empiric experience has served as a guide in the past, and the remedial procedures instituted have as a rule been local and palliative rather than fundamental and permanent in character.

The coagulation of the blood has formed the subject of intensive study on the part of physiologists and biochemists for decades. Even the most recent literature in this field abounds in many contradictory statements, irreconcilable observations and obscure points. It calls for no small degree of scientific courage at the present moment to venture an attempt at a comprehensive summary or a tenable theory. The variables are still too numerous and complex to fit into any complete hypothesis yet offered. So long as the experts cannot agree, the physician of today may be excused if he fails to understand the obscure language in which the coagulation phenomena are currently described. The growth of scientific nomenclature is not always a guarantee of progress in the elucidation of the problems of science.

In spite of the confusion, there is an accord on certain fundamental features. Two factors, which we may call fibrinogen and thrombin, unquestionably play a part in the coagulation of the blood. There is a growing objection to the older theories which regard this process as essentially enzymatic in nature. Thrombin, which is somehow formed from a precursor, prothrombin, reacts with fibrinogen to form the fibrin of the clot. According to Howell, the non-coagulability of circulating blood depends on the fact that an inhibitory substance, antithrombin, prevents the activation of the prothrombin into thrombin.

From a practical standpoint in medicine it is of no small moment to learn clearly what substances actually act as accelerators or inhibitors of coagulation. One need only recall the predicament offered by the slow clotting of the blood in hemophilia to gain some appre-

ciation of what might be accomplished if the factors were thoroughly understood. Little by little, however, useful progress is being made. An illustration of this is afforded by a recent study of the effect of rapid progressive hemorrhage on the factors of coagulation.[1] It has long been known that the coagulation time of the blood is decreased under the condition noted.[2] This is, indeed, an advantageous adjustment for the organism. In a search for quantitative alterations in the different factors of coagulation corresponding to the decrease in coagulation time after hemorrhage,[1] it was discovered that the antithrombin decreases in amount and remains practically constant when the coagulation time is unchanged. Under conditions of diminished coagulability of the blood an increase in its antithrombin has been demonstrated; but this newer research is regarded as the first instance in which there has been reported a positive decrease in the antithrombin content of the blood.

## Current Comment

### A RARE ZOOPARASITE IN MAN

The rarities and novelties of medical experience almost always embody some features of interest quite aside from the immediate practical questions which they involve. When cases of tropical disease are discovered in the temperate zones, the problem of their origin and distribution is inevitably suggested. With the means of communication between the Orient and America improving every year, it is not surprising to learn that disease-producing agencies heretofore unknown among us should follow the easy paths of commerce. These reflections are awakened by the first reported American case of infection with the larval cestode, *Sparganum mansoni*. Somatic teniasis, due to infection with the larval stage of tapeworms, is not a frequently observed condition. Among the different types, hydatid disease, due to infection with the larval *Echinococcus*, and cysticercosis associated with the presence of the larvae of *Taenia* are known far better than the infection with the bothriocephalid larvae of the species *Sparganum mansoni*. Although this larval tapeworm was discovered in 1882, all of the cases of human infection with the zooparasite hitherto reported have concerned persons either living in the Far East (China and Japan) or those who have presumably traveled there. The parasite lodges in various tissues of the body, and is said to show a tendency to wander from one locality to another. The host is not known, so that preventive measures cannot intelligently be followed to avoid infection. When the parasite presents itself to view, as is sometimes the case in the urinary passages, it can usually be removed mechanically. In other cases, when the worm locates in superficial swellings of muscle or connective tissue, surgical treatment must be employed. It was the latter procedure which led to the discovery of the larval *Sparganum* in a breast tumor by Dr. Moore[1] of Houston, Texas. The fact that the patient had never been out of the borders of the United States at the time when the worm, measuring 21.5 cm., was removed from a tissue mass near the nipple, presents a new feature in respect to the geographic distribution of this species of parasite.

1. Drinker, Katherine R., and Drinker, C. K.: Factors Affecting the Coagulation Time of Blood, VI, The Effect of Rapid Progressive Hemorrhage on the Factors of Coagulation, Am. Jour. Physiol., 1915, xxxvi, 305.
2. Gray, H., and Lunt, H. K.: Am. Jour. Physiol., 1914, xxxiv, 332.

### THE POISONOUS PRINCIPLE IN WATER HEMLOCK

Among the poisonous plants of which the toxicologic agent has not heretofore been classified with any well-defined chemical group, the water hemlock has furnished many victims. Nine or ten species of *Cicuta*, belonging to the Umbelliferae, or parsley family, have been recorded as occurring in this country. They are, of course, to be clearly distinguished from the spotted hemlock (*Conium maculatum*) of Socrates fame, which is a different genus. The harmful results from eating the roots of the water hemlock have not been confined to domestic animals, among which the mortality has at times been reported to be very high. Two decades ago it was not uncommon to read of severe intoxications in man usually owing, it is said, to a confusion of parts of the plant with parsnips. One author has collected thirty-one cases of poisoning by *Cicuta*, of which number fourteen were fatal. Suicides among Indians, caused by eating the roots of the plant, have also lately been reported. The European pharmacologist Boehm prepared a crude product from the water hemlock and gave the name "cicutoxin" to it. Tested toxicologically, this substance provokes symptoms similar to those which have been described in the poisoning of man by eating the roots. There usually are tremors followed by tonic and clonic spasms. Paresis of the extremities appears, and finally there may be full paralysis and death. It has been supposed that the poison acts specially on the medulla, while the brain and spinal cord are only secondarily affected. At the Nevada Agricultural Experiment Station in Reno, Jacobson[2] has reinvestigated the chemistry of these potent plants. According to him at least three distinct species of water hemlock, growing in the United States along the banks of streams and in marshy ground, contain the same poisonous principle, which is located primarily in the rootstalk of the plant. Cicutoxin is an unstable resinlike substance of the formula $C_{19}H_{26}O_3$, and is a complex derivative of pyrone. It decomposes and polymerizes readily, especially at temperatures above 50 C. (122 F.). A reliable chemical test for its presence has been found. The lethal dose of this "spasmotoxin," which produces symptoms that include a paroxysmal and a paralytic stage, cannot yet be given with any approach to accuracy. The order of magnitude may be indicated by the fact that about 50 milligrams per kilogram of body weight will kill

1. Moore, J. T.: Sparganum Mansoni, First Reported American Case, Am. Jour. Trop. Dis., 1915, ii, 518.
2. Jacobson, C. A.: Cicutoxin: The Poisonous Principle in Water Hemlock (Cicuta), Jour. Am. Chem. Soc., 1915, xxxvii, 916.

small animals. Death usually ensues from asphyxiation and exhaustion. No antidote is at present known. The allaying of the convulsive symptoms by means of a narcotic is at best a palliative procedure.

## AN IMPORTANT RULING ON THE HARRISON LAW

Since the Harrison law went into force, frequent inquiries have been made as to the quantity of drugs which a physician was justified in prescribing or dispensing. Obviously, the quantity necessary in chronic cases or in the treatment of drug habitués differs materially from the quantity permissible in an ordinary case. The law makes no provision on this point, except to provide in general terms that, whether prescribing or dispensing, all acts coming under the scope of the law must be in good faith and not to evade the purposes of the act. It has been evident that some supplementary ruling on this point would be necessary. The Commissioner of Internal Revenue has just issued a ruling, dated May 11, which provides that

"where a physician, dentist, or veterinarian prescribes any of the aforesaid drugs (those included in the provisions of the Harrison law) in a quantity more than is apparently necessary to meet the immediate needs of a patient in the ordinary case, or where it is for the treatment of an addict or habitué to effect a cure, or for a patient suffering from an incurable or chronic disease, such physician, dentist, or veterinary surgeon should indicate on the prescription the purpose for which the unusual quantity of the drug so prescribed is to be used. In cases of treatment of addicts, these prescriptions should show the good faith of the physician in the legitimate practice of his profession by a decreasing dosage or reduction of the quantity prescribed from time to time, while on the other hand in cases of chronic or incurable diseases, such prescriptions might show an ascending dosage or increased quantity. Registered dealers filling such prescriptions should assure themselves that the drugs are prescribed in good faith for the purpose indicated thereon, and if there is reason to suspect that the prescriptions are written for the purpose of evading the intentions of the law, such dealers should refuse to fill same."

Under this ruling, physicians must place on their prescriptions, whenever, for any reason, an unusual quantity of opium or cocain is prescribed, a statement of the reasons for such an order. If the physician and patient are acting in good faith, it is difficult to see any objection to such a provision. There will, of course, be some sensitiveness on the part of secret drug addicts to having their weaknesses made a matter of record, but this can hardly be avoided in any plan which will separate the genuine from the spurious demand for these drugs. The ruling of the Commissioner will clear up a point on which there has been much discussion. As THE JOURNAL has constantly stated, the object of the Harrison law is to secure publicity in the use of habit forming drugs and to effect the prosecution and punishment of all persons using them for illegitimate purposes. Compliance with this ruling will relieve physicians of responsibility and will make the prescribing or dispensing of unusual amounts of these drugs a matter of record.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## CALIFORNIA

**Home for Incurables Opened.**—A new home for incurables at the corner of Geary and Wood streets, San Francisco, was formally opened April 26. The building will accommodate thirty-six patients.

**Vaccination Foes Defeated.**—The senate, May 5, refused passage of the Gelder bill, which releases schoolchildren and students from compulsory vaccination. The bill was defeated by a vote of 23 to 12.

**Hospital Dedicated.**—On May 1 the new San Francisco City and County Hospital group of buildings on Protrero Avenue, erected at a cost of $2,000,000, was dedicated with appropriate ceremonies. The president of the board of works formally delivered the completed buildings to the mayor, who accepted the group in the name of the citizens of San Francisco. There are 350 beds at present ready for occupancy.

**Physician's Tax Annulled.**—The section of the local license ordinance of Turlock, which imposed a tax of $10 a day on transient physicians practicing in that city, was declared unconstitutional by Superior Judge L. W. Fulkerch, April 28, when he granted a petition for the release of Dr. J. H. Berry, on a writ of habeas corpus. The proceeding held that the section was "discriminatory, prohibitive and unreasonable."

**Personal.**—Dr. Samuel H. Horwitz has been appointed instructor in research medicine in the Hooper Foundation for Medical Research of the University of California, San Francisco.——Dr. Edouard C. Fabre-Rajotte, San Francisco, has been appointed eye, ear, nose and throat specialist to the French Hospital in that city.——Dr. Jacob H. Parsegan, San Francisco, has returned after a trip to Marsovan, Turkey, and Asia.——Dr. William A. Brooke, Halfmoon Bay, has been appointed coroner and public administrator of San Mateo County.

**Hospital Notes.**—The cornerstone of the Methodist Hospital of Southern California, Los Angeles, was laid May 3. The building is to be of reenforced concrete, six stories and basement in height, will accommodate 120 patients and will cost when completed, $210,000.——The Bellevue Hospital Corporation has been organized at Los Angeles, to erect a hospital to be known as the Bellevue Hospital, to contain about sixty rooms and to cost about $60,000.——The French Hospital Association has revived the plan to erect a modern hospital building at the corner of College and Castelar streets, Los Angeles. The building will cover a ground space of 150 by 40 feet, will be two stories in height and will contain two wards and eighteen private rooms, beside the necessary surgical rooms, kitchen and administrative offices, and the building is estimated to cost about $40,000.

## FLORIDA

**Florida has a Single Board.**—A bill providing for a single board of medical examiners, in place of the three separate and independent boards, has passed the Florida legislature. The law also provides for a reregistration of all physicians and osteopaths in the state.

## GEORGIA

**War on Hookworm.**—The board of commissioners of Randolph County has made a special appropriation of $150,000, to be spent in fighting hookworm in that county.

**Drainage Expert to Fight Typhus.**—Mr. George Hazelhurst, formerly of Atlanta, an expert engineer in drainage work of Savannah, has accepted a position under the Rockefeller Foundation for work against typhus fever in Serbia.

**Personal.**—Dr. Walpole C. Brewer, Atlanta, has started for New York for service with the British Red Cross.——Dr. G. H. Lowden, assistant superintendent, has succeeded Dr. Louis Hollander as superintendent of the Battle Hill Tuberculosis Sanatorium.——Dr. J. L. Adams was shot and seriously wounded near Donaldsonville, April 13.

**Ware County in Advance.**—A new epoch in public health work has begun with the action of the commissioners of Ware County in creating the office of county health officer. A health officer for each county in Georgia was authorized by the Ellis bill in the 1914 legislature, the authorization being subject to approval by the board of commissioners.

**Health Officers Meet.**—The Georgia Association of County and Municipal Health Officers met in Macon, April 20, and elected Dr. Howard J. Williams, Macon, president, and Dr. Peter J. Bahnsen, state veterinarian, secretary. A committee was appointed to memorialize the Georgia legislature to pass a law at its next session, requiring that each town and city in the state record vital statistics.

**Sanatorium Wants New Buildings.**—On the ground that the constantly increasing number of patients at the Georgia State Sanatorium, Milledgeville, renders imperative the provision of additional facilities, the trustees of that institution have recommended to the next general assembly an appropriation of $500,000, with which to erect and equip new buildings. The buildings for which there is most urgent need are new wards, one for white women and one for negroes, a hospital for the treatment of curable cases and a nurses' home.

**State Medical Association Meeting.**—The sixty-sixth annual meeting of the Medical Association of Georgia was held in Macon, April 21 to 23, under the presidency of Dr. William B. Hardman, Commerce. Columbus was selected as the next place of meeting and the following officers were elected: president, Dr. William S. Goldsmith, Atlanta; vice-presidents, Drs. Olin H. Weaver, Macon, and George B. Smith, Rome; secretary-treasurer, Dr. William C. Lyle, Augusta, reelected; councilors, tenth district, Dr. James A. Price, Milledgeville; eleventh district, Dr. Lee Howard, Waycross; twelfth district, Dr. Edward F. Coleman, Graymont; delegates to the American Medical Association, Drs. Mallie A. Clarke and Charles C. Harrold, Macon, and alternates, Drs. Wyman W. Pilcher, Warrenton, and Thomas J. McArthur, Cordele. The association adopted resolutions favoring Atlanta as the meeting place for the American Medical Association in 1916.

## ILLINOIS

**Leper Colony Planned.**—The Illinois State Board of Administration has planned to establish a leprosarium in connection with the Alton State Hospital, which is now under construction.

**Banquet to Interns.**—The attending physicians of St. John's Hospital, Springfield, gave a dinner to the interns of the hospital at the St. Nicholas Hotel, April 29. Dr. Ben B. Griffith was toastmaster.

**Municipal Health Officers Should be Physicians.**—The Elgin Physicians Club, at its meeting May 3, adopted resolutions petitioning the mayor and commissioners to change the ordinance regarding the health department, so that the health officer must be a qualified physician with laboratory experience.

**Personal.**—Dr. Henry G. Wildman of the County Tuberculosis Hospital, Oak Forest, has been restored to professional standing by the decree of Assistant County Judge Hoover, dated May 14.——Dr. Walter Stevenson, Quincy, who has been ill with diphtheria, is convalescent and has resumed practice.——Dr. Henry S. Bennett has succeeded Dr. Perry H. Wessel as city physician of Moline.

**Epidemic Diseases.**—On account of the prevalence of scarlet fever at Mattoon, orders have been issued that no child under 16 may attend moving-picture shows or other public gatherings.——Measles is very generally prevalent in Jacksonville. The epidemic is mild in its type.——The health officer of Rock Island reports that during the month of April, 154 cases of measles and 20 cases of smallpox were reported in the city.——Schools at Ashton have been closed and public meetings interdicted on account of an epidemic of smallpox.——Smallpox of a mild type is reported from Rochelle.——During April, 109 families in Pana were under quarantine for measles and 13 families on account of smallpox.

### Chicago

**Child Welfare Taken up by Society.**—The May 5 meeting of the Chicago Medical Society was devoted entirely to the subject of child welfare.

**Appeal for Funds.**—The Chicago Tuberculosis Institute appeals for contributions to make up the deficit of about $2,500 of the $12,000 needed for the budget for the year.

**Rosenow Joins Mayo Foundation.**—Dr. E. C. Rosenow, a member of the staff of the Memorial Institute for Infectious Diseases, has been appointed one of the directors of the Mayo Foundation and chief of the department of bacteriologic research. He expects to assume his new duties about July 1.

**Personal.**—Dr. Robert L. I. Smith sailed for Europe, May 8, to work in the Belgian Red Cross with Dr. Dupage, surgeon-general of the Belgian army.——Dr. Anna Dwyer has been appointed a member of the subcommittee of the morals commission on regulation of pool rooms and additional recreation facilities.

**Public Laundry Suggested.**—The commissioner of health has suggested to the mayor the establishment of a public laundry in connection with the public municipal bath to be built on North Lincoln Street near Augusta. In this plan Chicago is years behind the cities of Europe and especially England, which has had for many years public laundry facilities in connection with the public baths.

## KANSAS

**New Hospital.**—George M. Hoffman, a banker of Rice County, is about to establish a hospital in Little River, to be under the charge of Drs. L. H. Powers and Louie J. Beyer, Little River.

**Personal.**—Dr. Rollo C. Dugan, Ottawa, superintendent of the Ottawa Hospital, who has been under treatment in Chicago, has returned and resumed practice.——Dr. George H. Hobson, Kansas City, has temporarily succeeded Dr. Chilton W. McLaughlin as health officer of Kansas City.

**University Health School.**—A free course of instruction for Kansas physicians was given in the Bell Memorial Building, Rosedale, by the University of Kansas and the State Board of Health for two weeks, from April 26 to May 10. Among other speakers, Dr. John S. Fulton, secretary of the Maryland State Board of Health, delivered an address on "Population and Birth"; Surgeon Mark J. White, U. S. P. H. S., St. Louis, discussed "The Pathology and Diagnosis of Bubonic Plague," and Dr. Albert J. Chesley, Minneapolis, director of the division of preventable diseases of the Minnesota State Board of Health considered the "Organization of the State Public Health Service."

**Protests Quarantine.**—At a meeting of the State Livestock Sanitary Board held in Lincoln, Neb., April 23, an emphatic protest was made by the state of Kansas against the quarantine which Nebraska has enforced against Kansas livestock as a precaution against the foot and mouth disease. During the past six months, Kansas has had six outbreaks of this disease, and it has been necessary to kill 1,217 cattle valued at $72,588.78 and 313 hogs valued at $3,463.20. The owners of the animals were reimbursed in full by the state and national governments. In addition to this, the state has paid $38,025.99 for disinfection and in addition, the necessary veterinary inspection.——Notice has been served on the Texas livestock commission by the state of Kansas that quarantine will be declared against Texas unless that state lifts the ban against Kansas.

**State Society Meeting.**—The Kansas Medical Society held its forty-ninth annual meeting in the Masonic Temple, Kansas City, Kan., May 5 and 6, under the presidency of Dr. William F. Sawhill, Concordia, and elected the following officers: president, Dr. Oliver D. Walker, Salina; vice-presidents, Drs. Charles W. Jones, Olathe; Benjamin F. Chilcott, Osborne, and John R. Scott, Newton; secretary, Dr. Charles S. Huffman, Columbus (reelected); treasurer, Dr. Lewis H. Munn, Topeka (reelected); councilors, first district, Dr. Charles W. Reynolds, Holton; second district, Dr. Clarence C. Goddard, Leavenworth; seventh district, Dr. Kirk P. Mason, Concordia; eighth district, Dr. Howard N. Moses, Salina, and ninth district, Dr. Chauncey S. Kenney, Norton; delegate to the American Medical Association, Dr. William F. Sawhill, Concordia. Topeka was selected as the next place of meeting.

## MARYLAND

**Sanitary Engineer Starts for Serbia.**—Charles E. Fox of the State Sanitary Engineering Department sailed for Serbia, May 13, to serve as sanitary inspector under the Serbian government. His special duty will be the cleaning up of the typhus plague spots in Serbia.

**To Build New Hospital.**—Tentative plans looking to the abandonment of its present building and the erection of a modern new hospital in North Baltimore are being con-

sidered by the board of trustees of the Union Protestant Infirmary, who are negotiating for a site near Homewood.

**Brady Institute Opened.**—The formal opening of the James Buchanan Brady Urological Institute, Johns Hopkins Hospital, took place on May 4 with elaborate exercises. There were formal dedicatory exercises early in the afternoon, followed by a reception to Mr. Brady, and in the evening a banquet was held at the Belvedere Hotel. Among those making addresses at the opening were: Dr. Hugh H. Young, Director of the Institute, Dr. William H. Welch and Dr. Edward L. Keyes, of New York.

**Physicians Officiate at Church Service.**—On May 16, the services at the Emmanuel Protestant Episcopal Church, Baltimore, were participated in by a number of practitioners in attendance on the meeting of the Medical and Chirurgical Faculty of Maryland. Dr. Richard Clarke Cabot, Boston, delivered the sermon, the lessons were read by Drs. Winford H. Smith and Hiram Woods, and the ushers were Drs. Frank Martin, William W. Russell, John M. Hundley and Page Edmunds.

**Gift for Johns Hopkins Hospital.**—Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, has announced a gift of $16,500, to be paid in three yearly instalments, from John D. Rockefeller, Jr., to be used in a special social hygiene department at the hospital, which is to be established next September. The work of the new clinic will be in charge of a committee consisting of Dr. George H. Walker, chairman, Dr. Theodore C. Janeway and Dr. Winford H. Smith. Dr. Albert Keidel, a graduate of the Johns Hopkins Medical School, will be the physician in charge of the new dispensary. He will have four assistants.

**Personal.**—Dr. David K. Henderson, Baltimore, has resigned as resident physician to the Phipps Psychiatric Clinic, Baltimore, to accept a position as superintendent of the Glasgow Royal Asylum, Scotland.——Dr. Roscoe W. Hall, Baltimore, who is assistant resident physician at the Phipps Clinic, has been appointed by Dr. Winford H. Smith to fill the vacancy caused by the resignation of Dr. Henderson. Dr. Charles B. Thompson has been made first assistant physician and Dr. Augusta Ruby Scott, second resident. Dr. Scott is the first woman to hold this position.——Dr. Walter L. Nicholls, Baltimore, recently underwent operation at the Mercy Hospital.——Dr. John C. Travers, of Baltimore, has been appointed by Health Commissioner Nathan R. Gorter, assistant physician at the Quarantine Hospital to succeed the late Dr. E. G. Altvater.——Dr. John J. Szymanki Schmitt, a young Polish physician, who is at present engaged in special urological work at the Johns Hopkins Hospital under Dr. Hugh H. Young, sailed May 13 from New York for Piraeus, Greece, where he will act in the capacity of sanitary inspector in conjunction with the American Red Cross work.——Dr. Robert H. Crawford, an intern at the Union Protestant Infirmary, has sailed for Europe to engage in Red Cross work. He will land at Rotterdam and go from there to Germany.——Dr. John E. Fisher, Baltimore, was thrown from his buggy in a collision with a motorcycle, May 5, and was painfully injured.

**State Medical Faculty Elect.**—At the one hundred and seventeenth annual meeting of the Medical and Chirurgical Faculty of Maryland held in Baltimore, April 27 to 29, the following officers were elected: president, Dr. J. Whitridge Williams, Baltimore; vice-presidents, Drs. Lewis C. Carrico, Bryantown; Milton D. Norris, Eldersburg; and Joseph A. Chatard, Baltimore; secretary, Dr. Joseph I. France, Baltimore; treasurer, Dr. William S. Gardner, Baltimore; delegate to the American Medical Association, Dr. G. Lane Taneyhill, Baltimore; alternate, Dr. Herbert Harlan, Baltimore; councilors, Drs. Guy Steele, Cambridge; J. B. Johnson, Frederick; Henry L. Naylor, Pikesville; William J. Todd, Mount Washington, and Edwin B. Claybrook, Cumberland; and Drs. David Streett, Wilmer Brinton, Randolph Winslow and Harvey B. Stone, Baltimore; members of the State Board of Medical Examiners, Drs. John L. Riley, Snow Hill; and Lewis A. Griffith, Upper Marlboro (reelected). A large oil portrait of the late Dr. William Travis Howard, professor of diseases of women in the University of Maryland from 1867 to 1897, and presented to the faculty by Dr. Howard's widow, was unveiled in Osler Hall, Baltimore, April 27. Dr. J. Whitridge Williams made the speech of presentation and the portrait was accepted in behalf of the faculty, by Dr. J. W. Humrichouse. Two amendments to the constitution were adopted, one abolishing the Board of Trustees and the other, increasing the members of the council from eleven to fifteen.

## MISSISSIPPI

**State Association Meeting.**—The Mississippi State Medical Association held its annual meeting in Hattiesburg, May 11 to 13, and elected the following officers: president, Dr. Inman W. Cooper, Newton; vice-presidents, Drs. Walter H. Scudder, Mayersville; William L. Orr, Fulton, and James W. Lucas, Moorhead; councilors, third district, Dr. Charles M. Murry, Ripley; fourth district, Dr. Felix J. Underwood, Nettleton; ninth district, Dr. John C. McNair, Fayette; delegate to the American Medical Association, Dr. Jacob S. Ullman, Natchez; alternate, to be appointed by the president-elect; members of the State Board of Health, Drs. S. Wade Glass, Lyon; Samuel E. Eason, New Albany; Thomas F. Elkin, Tupelo; Thomas H. Seay, Laurel, and John H. Johnson, Brookhaven. It was voted to continue the present arrangement with the *Pan-American Medical and Surgical Journal.*

## NEBRASKA

**State to Make Sanitary Survey.**—A proposal to make an extensive and thorough sanitary survey of the state has been made by the board of secretaries of the State Board of Health on a plan similar to that pursued by Dr. Oscar Dowling in Louisiana.

**Personal.**—A farewell dinner was given, May 6, to Dr. Anders P. Overgaard by the Dodge County Medical Association at Fremont. Dr. Overgaard expects to reside in Omaha.——Dr. Arthur A. Spoor, Omaha, of the University of Nebraska, has been appointed state bacteriologist of Michigan.

**Smallpox.**—Seven new cases of smallpox were reported to the health office at Hastings, April 21. This makes a total of 36 cases since the epidemic began. Those who neglect to report cases are to be vigorously prosecuted.——The smallpox situation at Benkelman is now considered to be well under hand. Only one or two new cases developed during the last week.

**Hospital News.**—An architect has been selected for the state hospital building, to be erected on the campus of the College of Medicine of the University of Nebraska, Omaha. The building with equipment will cost about $50,000. It will be in the same general style of architecture as the college building and will be erected west and a little south of the latter.

## NEW YORK

**Appropriations for Port Health Office.**—Dr. Joseph H. O'Connell, Health Officer of the Port of New York, after a hearing before Governor Whitman, secured the appropriations he had requested.

**Payments for Birth and Death Records.**—As the result of the enactment of an amendment to the health law which has been recently signed by the governor, physicians will receive a fee of twenty-five cents for each birth and death record filed. This, it is hoped, will do away with the difficulties which have heretofore arisen from non-registration or improper or late registration of births and deaths.

**Amend Habit-Forming Drug Law.**—The Boylan law has been amended so as to make it unnecessary to use the "Boylan Law" order blanks in order to secure these drugs, provided that the State Commissioner of Health approves in their place such order blanks as may be issued under an Act of Congress. The Commissioner of Health has approved the order blanks required by the federal (Harrison) law and it will therefore in the future be unnecessary to use the Boylan law blanks if the federal order blanks are used.

**Contagious Diseases.**—It is reported from Poughkeepsie that the scarlet fever situation is well in hand and that no case has developed among the pupils of the public schools beyond the thirteen reported.——The epidemic of measles in Syracuse is said to be on the increase. During April, 528 cases were quarantined and there were 225 under quarantine on May 6.——The foot and mouth disease quarantine in the townships of North Greenbush, East Greenbush, Sand Lake, Poestenkill, Grafton, Pittstown, and Schaghticoke, has been ordered to be raised except within a radius of three miles of any farm or on farms where foot and mouth disease has actually existed.——Fourteen families in the north end of Olean are under quarantine for smallpox. The public school has been closed and a general order has been issued for the vaccination of the school children.

**Personal.**—Dr. James T. Houghton, Saratoga Springs, a passenger on the *Lusitania* on her last trip, is on his way to take his place on the surgical staff of the Belgian Red

Cross.——Dr. Edgar A. Vander Veer has been elected president and Dr. George E. Gorham, secretary, of the Bender Hygienic Laboratory, Albany.——Dr. Henry Hun has been elected a member of the Board of Trustees. At the last meeting of the board, the resignations of Drs. Albert Vander Veer and Willis G. Tucker were accepted and votes of thanks were given to them for their labors.——Dr. O. W. H. Mitchell, has resigned as city bacteriologist of Syracuse to accept the chair of bacteriology in the College of Medicine of the University of Syracuse.——Dr. Mason R. Pratt, Syracuse, has assumed his new duties as superintendent of the Hebrew Hospital, Baltimore.——Dr. James E. Burns, Glen Cove, L. I., has been appointed inspector for the Long Island District under the new Harrison law.

### New York City

**Clinic Moves.**—The municipal clinic for diseases of the throat and lungs has been moved to a building secured by the Board of Health at 420 Herkimer Street, Brooklyn.

**Personal.**—Dr. F. Warren Pearl of New York City was among those rescued from the *Lusitania*.——Dr. and Mrs. Henry H. M. Lyle arrived from Liverpool on May 13.

**Smallpox on Arriving Ship.**—The steamship *Havana*, which arrived from Havana, May 12, had aboard a case of smallpox. All the other passengers were ordered to be vaccinated before being allowed to land.

**Division of Statistical Research.**—A division of statistical research will be organized within the Bureau of Records on Jan. 1, 1916. An effort will be made to utilize the activities of this new department in such a way that other bureaus of the Department will be guided in their work by its findings. Such a division has been repeatedly recommended by special committees.

**Dr. Goldwater Offers to Run Street Railway.**—Health Commissioner Sigismund S. Goldwater, while admitting that he is going outside the bounds of his department, has published an unofficial offer made to Theodore P. Shonts, President of the New York Railways Company, to operate the cars on the Sixth Avenue line for an experimental period, as he is thoroughly convinced that at least 10 per cent. more cars could be run than at present.

**Health Department Undertakes Novel Investigation.**—The Department of Health has organized an experimental health district for the purpose of making a trial of the merits of local or decentralized municipal health administration. The activities of the department in "Health District No. 1" will continue to be identical with those of the department elsewhere. This plan is to be continued except that advantage will be taken of every means of increasing the effectiveness of the work by cooperation with local civic agencies and by arousing and sustaining in the district's residents an interest in personal hygiene. To this end an exhaustive study is being made of housing, occupation, recreation, and the habits and resources of the entire population, with the object of thus developing rationally a health program which will deal in an effective way with whatever is found actually to impede healthful living. All physicians and others interested in health matters are invited to visit the Headquarters of Health District No. 1 at 206 Madison Street.

**Labor Health Bureau Started.**—The Commissioner of Health, Dr. Sigismund S. Goldwater, has directed the formation of a new division of the Bureau of Infectious Diseases, to be known as the division of industrial hygiene, and of this, Dr. Lewis L. Harris has been designated chief. The tentative program of the work of this division includes:

"1. A general 'industrial survey' comprising (a) a statement of the number of employes in the city in extra hazardous occupations, and (b) a general statement as to where the most unhygienic 'plants' under these industries are situated.

"2. An intensive study of the conditions of work and the physical condition of the workers in, say, half a dozen of the most hazardous industries in the city.

"3. Arrangements with certain dispensaries to open special occupational disease clinics to which all sufferers from occupational ills could be referred.

"4. All observations should be checked with corresponding data as to home conditions, else conclusions may be assailed as incomplete. For example, tuberculosis among garment workers may be wholly due to home conditions and the workshop may be exceptionally hygienic. This could, in part, be done by co-operation with the Tenement House Department, although social service workers are the proper persons to obtain such data."

**Summary of Health Activities of Academy.**—The Public Health Committee of the New York Academy of Medicine has published in leaflet form, a summary of its activities for March and April, which include a medical estimate of certified milk; an amendment to the penal law relating to necropsies; an inquiry into the practicability and feasibility of so changing the present law as to require a year of hospital training for all applicants to practice medicine; a questionnaire as to the number of cases of heart disease in children cared for in hospital wards and dispensaries; the problem of providing adequate facilities for the treatment of drug habitués; the medical and sanitary care of inmates of the Home for the Aged; the conditions existing at the hospital of the Workhouse on Blackwell's Island and the need of improving the medical service; cooperation in the meeting on quarantine held April 20; consideration of many of the bills relating to public health and the strong opposition to the so-called Hinman bills and also the bill exempting Christian Science practitioners from the provisions of the medical practice act.

**Limitations of the Dairy Score Card.**—A bulletin recently published by the New York Agricultural Experiment Station at Geneva sets forth in detail an interesting series of experiments as to the relationship of dairy scores and bacteria values of certain milk supplies. These experiments were conducted by Dr. Brew and seem to show that a dairy score card does not furnish a reliable index to the quality of the milk, inasmuch as it is found that in many instances the best milk from a bacteriologic point of view came from low score dairies, while milk from high score dairies was found grossly contaminated. One of the most important conclusions arrived at was that one shortcoming of the score card was its inability to take account of the personal equation of the dairyman himself. A clean dairyman will produce a clean article even under adverse conditions, whereas a dirty individual would produce dirty milk even under the best conditions. It seemed, however, that where such a degree of care was given as was required by the numerous details noted on the score card it was safe to assume that due precaution was taken to safeguard against accidental pollution that was not guarded against on the average low score dairy farm. The finding that only two of the dairies used ice made it probable that insufficient cooling had something to do in creating the conditions reported.

**Educational Lunch Room Opened.**—The New York Department of Health, on May 10, opened an educational lunch room for its employees at the headquarters of the department. The enterprise is being financed by the employees themselves. At the opening of the lunch room there were present the Acting Mayor Hon. George McAneny, Borough President Marcus M. Marks, Professor Graham Lusk, and many other distinguished guests. The menu issued daily lists under the heading of "Specials" the item sold, the price, quantity, number of calories and grams of protein. Two specimen lunches furnishing a balanced ration at low cost and at high cost—22c and 46c—respectively are offered. Under the heading "Ready Every Day" items are again listed with price, quantity, number of calories and grams of protein. The back of the menu is given over to many hints with the heading "Food Wisdom." Examples are:

Clerks, stenographers and the average adults doing office work need about 2,500 calories a day. Mechanics and artisans need about 3,000 to 3,500 calories per day, while laborers, longshoremen and others doing hard work need 3,500 to 4,500 calories per day.

Your lunch should consist of sufficient food to supply about 1,000 calories; 90 per cent. of these should be in the form of starches and fats. Look at the specimen lunches on this bill of fare and notice that this can be obtained for various prices.

Food should have not only sufficient nourishment, but should also supply certain necessary constituents to rebuild body tissue. Chief among these are protein and mineral salts.

Protein is especially abundant in meat, eggs, fish, milk, cheese, beans and peas.

### NORTH CAROLINA

**Ground Broken for Hospital.**—Ground was broken April 22, for the new Mercy General Hospital, to be built east of Charlotte.

**Drug Law Conviction.**—T. L. Love, a colored druggist of Raleigh, is said to have been convicted and fined $300 for violation of the state statute.

**Investigates Prison Camps.**—By direction of the governor, Dr. Watson S. Rankin, Raleigh, secretary of the State Board of Health, is making an investigation into the sanitary condition of the various prison camps in the state.

**State Society to Meet.**—The annual meeting of the Medical Society of the State of North Carolina will be held in Greensboro, June 15 to 17. On June 14 the State Health Officers Association will hold its annual session.

**Sanitary Survey Started.**—A sanitary survey of Orange County, which is being made by the United States Public Health Service and the North Carolina State Board of Health, was started by Surgeon Leslie L. Lumsden, U. S. P. H. S., this month. He is being assisted by Dr. E. C. Branson of the state university.

**Personal.**—Dr. George M. Cooper, Clinton, whole-time health officer of Sampson County, began work May 10, as chief of the bureau of rural sanitation and as assistant secretary of the State Board of Health.——The house of Dr. Garrett D. Gardner, West Asheville, was destroyed by fire, April 22, with a loss of $4,000.——Dr. John A. Williams, Greensboro, while visiting New York City was seized with a cerebral hemorrhage and taken to the Hudson Street Hospital. He is reported to be improving.——Dr. James D. Cochran, Fayetteville, has returned after a long stay in New York City and will remove to Nashville, Tenn.——Dr. H. D. Taylor, professor of bacteriology and pathology in the Wake Forest Medical School, has resigned to accept service with the Rockefeller Institute for Medical Research, New York City.——Dr. Owen H. Kenan, Wilmington, was one of the rescued passengers of the *Lusitania*. He was on his way abroad to engage in the Red Cross service. He was ill for several days, but is now reported to be convalescent.——Dr. Henry M. Tucker, Raleigh, has returned after several months postgraduate work and resumed practice.——Dr. George R. Cooper has been placed in charge of the newly created bureau of rural sanitation and just opened his office in the building occupied by the State Board of Health, Raleigh. ——Dr. John W. P. Smithwick has been elected mayor of La Grange.——Dr. George W. Elias, Biltmore, and Dr. Montgomery H. Biggs, Rutherfordton, have been elected aldermen.——Dr. Raymond A. Pollock, New Bern, has returned after a course of postgraduate study in New York City.—— Dr. Jesse M. Russell, Canton, has been commissioned lieutenant in the Medical Corps, North Carolina National Guard and assigned to duty with the Canton Ambulance Company, succeeding Dr. J. Rufus McCracken, Waynesville, resigned. ——Dr. Michael P. Cummings has been elected mayor of Reidsville.

## OHIO

**Society to Study Alcohol.**—The Ohio Society for the Study of Alcohol and Other Narcotics, was organized in Cincinnati May 6; Dr. Simon P. Kramer was elected chairman pro tem. The society has a charter membership of 23.

**Physicians Organize.**—The Cuyahoga Falls Medical Association was recently organized with the following officers: honorary president, Dr. Wayland C. Hough; president, Dr. John W. Caines, vice-president, Dr. Floyd D. Smith; secretary, Dr. Daniel C. Keller, Jr., and treasurer, Dr. Bayard T. Keller, Hudson.

**Health Officials Must Not Interfere with Attending Physicians.**—Under the new rules governing the work of the epidemiologist, communicable disease nurses and sanitary inspectors of the state will be given instructions that they are under no circumstances to "interfere with or criticize the treatment or diagnosis of the attending physicians."

**Personal.**—Dr. Mark D. Stevenson, Akron, is seriously ill in the People's Hospital, Akron, on account of an infected wound of the finger.——Dr. Morton W. Bland, state registrar of vital statistics, Bellevue, who has been critically ill, is reported to be improving.——Dr. Ben R. McClellan, Xenia, has been appointed a member of the state medical board, succeeding Dr. Augustus Ravogli, Cincinnati.——Dr. Cyrus W. Chidester, Delaware, has been re-elected great medical examiner of Ohio, by the state convention of Maccabees.

**Communicable Diseases.**—Quarantine against foot and mouth disease epidemic has been extended to the counties of Ashland, Medina, Mahoning, Lorain, Erie and Huron and also portions of Paulding, Miami and Montgomery counties. ——Forty-one new cases of measles were reported in Cleveland May 4, bringing the total for four weeks to 719.——It is announced by the Youngstown Board of Health that the smallpox situation is now under control. At this time there were 18 cases under quarantine in 8 different houses. The health officer of Youngsville has been authorized to prepare the temporary detention hospital for use of the smallpox patients.——There are said to be nine cases of smallpox in the House of the Good Shepherd, Columbus, and sixteen cases have altogether been reported in the city.——In the Village of Berea and Middleburg township, fifteen cases of smallpox have been discovered.

**State Society Meeting.**—The annual meeting of the Ohio State Medical Association was held at the Hotel Gibson, Cincinnati, May 4, 5 and 6, and the following officers were elected: president elect and vice-president, Dr. Harmon B. Gibbon, Tiffin; president, Dr. William E. Lower, Cleveland; chairman of the committee on public policy and legislation, Dr. John H. J. Upham, Columbus; secretary-treasurer, and managing editor of the *Ohio State Medical Journal*, Dr. Clarence D. Selby, Toledo, and councilors—first district, Dr. Robert Carothers, Cincinnati; second district, Dr. John E. Hunter, Greenville; third district, Dr. Dana O. Weeks, Marion; fourth district, Dr. Charles W. Moots, Toledo; fifth district, Dr. Clyde E. Ford, Cleveland; sixth district, Dr. Edgar J. March, Canton; seventh district, Dr. James S. McClellan, Bellaire; eighth district, Dr. William E. Wright, Newark; ninth district, Dr. Joseph S. Rairdin, Portsmouth; and tenth district, Dr. Wells Teachnor, Columbus. Dr. George Dock, of Washington University, St. Louis, delivered the oration on medicine, the subject being, "The Thymus Gland," and Dr. Charles L. Scudder, Boston, gave the oration on surgery on "The Operative Treatment of Fracture of the Bone." Cleveland was selected as the next place of meeting.

## PENNSYLVANIA

**Vivisection Bill Recommitted.**—"Dog Pound Bill," which would work for the promotion of animal vivisection was recommitted on third reading in the senate, May 10. This bill provides for the sale, distribution and use, for the promotion of biologic science, of unclaimed animals in public pounds, the sale figure to be $1.

**New Bill for Optometry Board.**—As a consequence of a meeting held in the office of the attorney-general, May 13, a bill may be passed in the last hours of the legislature establishing a state board for the examination and licensing of optometrists. Earlier in the session a bill was passed and vetoed. The governor objected on the ground that the bill limited appointments on the proposed board to persons selected by the Pennsylvania Optical Society, and that there was no reason why the optometrists could not place themselves under the existing state Bureau of Medical Education and Licensure.——Another bill providing for the appointment of an optometric examining board, now in the house, was the subject of conference. A tentative agreement was reached, it was said, that the measure should be amended so as to provide for the appointment of a board consisting of three physicians, three optometrists and the state superintendent of public instruction, and that the actions of this board should be subject to the approval of the State Board of Medical Education and Licensure.

### Philadelphia

**Personal.**—Dr. Hobart A. Hare, who has been ill with pneumonia, has fully recovered and has resumed his practice and hospital work.——Dr. Willy Meyer of New York addressed the Philadelphia Clinical Association on May 17, and after the meeting was the guest of honor at a reception held at the Mercantile Club.

**New Hospital for Babies.**—A gift of 8½ acres of ground and several buildings on Manoa Avenue near Llanerch, Delaware County, has been made to the Babies' Hospital of Philadelphia, by a friend whose name has not been disclosed. The property has been altered to care for the hundreds of babies under 3 years old, suffering with "summer complaint." For four summers the hospital has used the buildings of the Children's Hospital at Wynnfield.

**Penny Lunches in Schools.**—Beginning next September the pupils in twenty-five elementary schools in South Philadelphia will be able to buy penny lunches at the morning recess. The superintendent of schools has been authorized to equip each building with luncheon counters. The home and school league for eight years has carried on luncheon rooms in nine schools, feeding 5,800 children.——A sample menu for the luncheons is as follows: One cent lunch—cocoa, graham wafers, milk, three pretzels, five stewed prunes, bean soup, rice pudding, sweet chocolate. Three cent lunch—bean soup, bread, stewed peaches or ham sandwich, cocoa, graham wafers, or hamburg steak in gravy, rice, bread.

**Paris Hospital Staff Named.**—Announcement has been made by Dr. J. William White of the personnel of the group of surgeons who will assume charge of the American Ambulance Hospital in Paris for the months of July, August and September, succeeding the Harvard group which has been in charge since April 1. Dr. James P. Hutchison will be managing head. The expedition is to be financed by volun-

tary contributions. About $10,000 is needed of which $5,000 has already been received. The physicians will pay their own expenses and serve without salary. The members of the group are, surgeon, Dr. James P. Hutchison, adjunct professor of surgery of the University of Pennsylvania; neurologist, Dr. Daniel J. McCarthy, professor of medical jurisprudence in the university; assistant surgeon, Dr. Edmund B. Piper, former chief resident surgeon of the University Hospital; Dr. Walter E. Lee, assistant surgeon at the Bryn Mawr and Germantown hospitals; Dr. Arthur E. Bitting, assistant surgeon, Pennsylvania Hospital; Dr. Peter Mc. Keating, Wawa, assistant attending surgeon at Bryn Mawr Hospital; bacteriologist, Dr. Samuel Goldschmidt Girrin, fellow in research medicine, University of Pennsylvania.

## TEXAS

**Malta Fever at Uvalde.**—Five members of a family who were brought to Uvalde for treatment, April 30, have been found to be suffering from malta fever.

**Tuberculosis Cottages Open.**—The eight new tuberculosis cottages at the Fort Worth County Poor Farm were opened for occupancy, May 1. The city of Fort Worth has agreed to pay one half the expenses connected with the care of the patients.

**New Officers for County Secretaries.**—The Association of Secretaries for County Medical Societies of Texas held its annual meeting in Fort Worth, May 6, and elected Dr. James C. Loggins, Ennis, president; Drs. Bacon Saunders, Fort Worth, and Frank Paschal, San Antonio, vice-presidents; and Dr. Holman Taylor, Fort Worth, secretary, ex officio.

**Hospital to Open.**—Physicians of Oak Cliff met April 23, and formed the Oak Cliff Medical and Hospital Association for the purpose ultimately of securing the establishment of a hospital in the Oak Cliff section of Dallas. Dr. Bert E. Greer was elected president; Dr. Albert Wilkinson, vice-president, and Dr. Homer Donald, secretary of the association.

**Northwest Texas Physicians Meet.**—At the annual meeting of the Northwest Texas Medical Association held in Wichita Falls, April 13 and 14, the following officers were elected: president, Dr. James H. Eastland, Mineral Wells; vice-president, Dr. Claud F. Young, Bowie, and secretary, Dr. Robert A. Duncan, Graham. Mineral Wells was chosen as the next place of meeting.

**Plea for County Hospitals.**—Dr. William B. Collins, Lovelady, state health officer, has issued a statement calling attention to the importance of establishing county hospitals in the various counties of the state, and especially for those suffering from communicable diseases. The county hospital law, passed by the legislature in 1913, which permits any county to construct a hospital for the care of its sick, has been employed by only six counties up to date.

**Personal.**—Dr. John S. Cooper, Dallas, sailed for Liverpool, May 1, as surgeon on the Booth Line steamship *Alden*. ——Dr. John C. Cassity, San Antonio, was shot and painfully wounded in an affray at Eminence, Ky., May 5.——Dr. James M. Nicks, Ranger, fell in Fort Worth, May 4, fracturing his left forearm.——Dr. D. Clinton Burkes, Belton, has entered on his duties as assistant in the Southwestern Hospital for the Insane, San Antonio.——Dr. Albert G. Clopton, Jefferson, is reported to be critically ill with pneumonia, at the home of his son in Washington, D. C.

**State Association Meeting.**—At the forty-ninth annual meeting of the State Medical Association of Texas, held in Fort Worth, May 4, 5 and 6, the following officers were elected: president-elect, Dr. James M. Inge, Denton; president, Dr. George H. Moody, San Antonio; vice-presidents, Drs. Murff F. Bledsoe, Port Arthur; Hardy C. Black, Waco, and Thomas D. Frizzell, Quanah; trustee, Dr. William R. Thompson, Fort Worth; councilors, first district, Dr. Felix P. Miller, El Paso; fourth district, Dr. Stoyell C. Parsons, San Angelo; twelfth district, Dr. Cleve C. Nash, Palestine; thirteenth district, Dr. Charles B. Williams, Mineral Wells, and fourteenth district, Dr. Alva W. Carnes, Hutchins; delegates to the American Medical Association, Drs. Andrew B. Small, Dallas; Holman Taylor, Fort Worth, and Manton M. Carrick, Dallas; and alternates, Drs. Frank Paschal, San Antonio; Edward H. Cary, Dallas, and John H. Foster, Houston. Galveston was selected as the next place of meeting.

**German-American Doctors Prosecuted.**—In the United States court at Houston early in April six men practicing as the German-American Doctors in Houston and two stenographers were convicted of using the mails to defraud and were sentenced to the United States prison at Leavenworth for various terms varying from three years to a year and a day. Among those convicted were Nathan and T. W. Hughes, Walter P. Pegram, A. S. Olsen and O. F. Bourque. The defendants were placed in the Houston jail. Drs. N. A. and T. W. Hughes, April 3, furnished bail in the sums of $3,000 and $2,000, respectively, and were released. A writ of error was allowed in the federal court at New Orleans on the application of the parties named, but all of the defendants except N. A. and T. W. Hughes were unable to furnish bond and remained in jail. At the trial it is said it was brought out that the defendants caused to be mailed typewritten letters exactly alike to all who made out and sent in diagnosis blanks, no matter what their symptoms might be. The treatment was said to be the same in each case, the "medicine" being mixed by a negro porter in the offices of the German-American Doctors, who testified to this fact, it is said. The case against the doctors was worked up by U. S. government secret agents.

## WISCONSIN

**Smallpox.**—Eight cases of smallpox in one family were discovered in Castle Rock, April 30.——An order compelling the vaccination of all Madison schoolchildren was issued by the Madison Board of Health, April 30, on account of the existence of 14 cases of smallpox in that city.

**Wisconsin Surgeons Meet.**—At the annual meeting of the Wisconsin Surgical Association held in Milwaukee May 5 and 6, the following officers were elected: president, Dr. F. Gregory Connell, Oshkosh; vice-presidents, Drs. Alfred H. Levings, Milwaukee; John M. Dodd, Ashland; Karl W. Doege, Marshfield; and Dennis J. Hayes, Milwaukee; secretary-treasurer, Dr. Daniel Hopkinson, Milwaukee; and regents, Drs. William C. F. Witte and Alfred H. Levings, Milwaukee. During the session of the association, clinics were held at the various hospitals of the city.

**Personal.**—Dr. Fern A. Rice, Delavan, is reported to be seriously ill as the result of hemorrhage of the stomach.——Dr. Leo J. Dretzka, Milwaukee, has been appointed superintendent of the new Detroit City Hospital.——Dr. Jesse Y. Potter, New London, who was operated on in Appleton, in March, has returned home convalescent.——Dr. Henry A. Pfeiffer, Jackson, sustained severe injuries by being thrown from his automobile near Jackson, Wis., April 21.——Dr. John R. Currens has been elected for the third term, mayor of Two Rivers.——Dr. Edward C. Fish, Mosinee, is reported to be seriously ill.

**News About Hospitals.**—Sunnyview, the new Winnebago County Tuberculosis Sanatorium which is being erected near Oshkosh, at a cost of about $30,000, is nearing completion. ——A stock company has been formed at Wausau to build a forty-room hospital, to cost $75,000.——Contracts for the Deaconess Hospital, Green Bay, have been awarded to the Appleton Construction Company. The building will cost $65,000.——Bids have been invited for the construction of a third wing to the Milwaukee Isolation Hospital on Mitchell Street. The building is to cost $100,000. It will have two departments, one for diphtheria and one for smallpox. The diphtheria ward will accommodate from 45 to 90 patients and the smallpox ward, from 55 to 110 patients.

## GENERAL

**Harvard Alumni at San Francisco.**—At the coming meeting of the American Medical Association in San Francisco there will be a table d'hote luncheon at the University Club, the date to be announced later, for members of the Harvard Medical Alumni Association. Dr. William P. Lucas of the University of California, San Francisco, is in charge of the arrangements.

**Gorgas Prize Medal.**—Referring to the Gorgas Prize Medal, to be awarded yearly by the Association of the Medical Reserve Corps, U. S. Army, New York State Division, the Board of Award announces that the competition is open to officers of medical corps of the Army, of the Medical Reserve Corps of the Army and of the Organized Militia. The medal will be awarded for the paper submitted which shows the most important advance in medicine or surgery on a medical or medico-military subject; preference being given to papers on a medico-military subject. The Board of Award consists of three members of the Faculty of the Army Medical School, appointed by the Surgeon General. All papers should be submitted by March 31 of each year, and should be

addressed to the President of the Board of Award, Gorgas Prize Medal, Army Medical School, Washington, D. C. The award will be announced at the graduation exercises of the Army Medical School, on May 31 of each year.

## FOREIGN

**Adoption of Age Limit for University Professors.**—A bill is now pending in the Italian legislature, after favorable report by a committee, decreeing an age limit without any exceptions for all the professors in the universities throughout Italy.

**The Campaign Against Alcohol.**—The authorities at Milan are planning the organization of eight anti-alcohol drinking places as a further step in the systematic campaign against alcohol. It is proposed to grant to private parties the concession for operating these municipal alcohol-less saloons.

**Italian Research on Pellagra.**—The *Policlinico* states that the government commission for the study of pellagra is now investigating the theory as to the origin and treatment of pellagra advanced by Alessandrini and Scala. Pellagrins will thus be given systematic courses of sodium citrate, on the one hand, and the region will be drained and otherwise treated in prophylaxis on the basis of Alessandrini's theory of the transmission of the disease.

**The Campaign Against Alcohol in Russia.**—The *Policlinico* of Rome relates that lotions and medicines containing alcohol and denatured alcohol are being consumed in Russia in large amounts since the supply of liquor has been cut off. A number of deaths have occurred in consequence of drinking these substitutes. The prefect of police issued a decree March 31 that no remedies containing alcohol could be dispensed without a physician's prescription. This raised such a storm of protests that the decree was rescinded and a new one issued to the effect that not more than 30 gm. of any medicinal preparation containing alcohol could be sold to one person.

**Tobacco Forbidden to All Under Sixteen at Lübeck.**—A decree was issued at Lübeck, March 9, 1915, which forbids persons under the age of 16 to smoke tobacco, cigars or cigarets. The parents or guardians of the young people are also held responsible for the enforcement of the decree. The sale of tobacco, pipes, cigars or cigarets to persons under 16 is forbidden, or their supply. The young persons themselves and their parents or guardians are alike held responsible for this. Penalties up to $15 or a jail sentence up to two weeks are provided for infraction of these regulations. The *Medizinische Klinik* comments that the outcome of these regulations, the first of the kind in Germany, will be watched with great interest. Lübeck is a separate state, an independent member of the German empire, a territory of 115 square miles, with a democratic constitution. The anti-tobacco decree is signed by the Public Health Service, the *Gesundheitsamt*.

## WAR NOTES

**Death of de Cérenville.**—The *Revue Médicale de la Suisse Romande* appears with a mourning border on account of the death of the fourth member of its editorial staff, Prof. E. de Cérenville of Lausanne, aged 72. He was for a long time the sole editor of the *Bulletin*, the predecessor of the *Revue*, and a member of the medical faculty of the university.

**Hospital Trains Donated to Germany.**—Three motor trains for carrying wounded have been presented to Germany by friends in America. Each consists of a motor truck and two trailers, and is equipped to carry ten severely wounded or seventeen slightly injured. One has been despatched to the army under the Crown Prince, another to Hindenburg's army, and the third to the eighteenth army corps.

**Italian Inspection of Sanitary Service in German and French Armies.**—Prof. B. Rossi of Milan has been making an official tour of inspection of the workings of the army medical and Red Cross service in France and Germany. He was given every facility by the German and French authorities, and has been addressing the profession at Rome since his return.

**German Surgical Congress Held at Brussels.**—The annual meeting of the German Surgical Association was supposedly postponed on account of the war, but the surgeon-general of the army sent out a recent summons for the meeting to be held at Brussels. Hundreds of surgeons flocked to the meeting, which commenced at Brussels, April 7. All the sessions were devoted to military surgery and a number of new points learned from practical experience were brought out. A fine exhibition of roentgenograms was one of the features of the meeting. Garré, Körte, Payr and Bier delivered the leading addresses.

**Aid for Belgian Physicians.**—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending May 15, 1915, lists the following contributions:

| | |
|---|---|
| Dr. Franklin B. Miller, Pittsburgh, Pa. | $ 25.00 |
| Dr. N. S. Jarvis, Captain U. S. A., New York, N. Y. | 15.00 |
| Dr. Charles G. R. Jennings, Elmira, N. Y. | 23.00 |
| Dr. H. E. Jenkins, P. A. Surgeon, U. S. N., Port Royal, S. C. | 5.00 |
| Dr. Luther G. Paul, Boston, Mass. | 5.00 |
| Dr. M. C. Smith, Lynn, Mass. | 5.00 |
| Arkansas Medical Society, Little Rock, Ark. | 50.00 |
| Dr. Charles Henderson Miller, Chicago, Ill. | 10.00 |
| Receipts for the week ending May 15 | $ 140.00 |
| Previously reported receipts | 6,720.50 |
| Total receipts | $6,860.50 |
| Previously reported disbursements: | |
| 1,625 standard boxes of food at $2.20 | $3,575.00 |
| 1,309 standard boxes of food at 2.30 | 3,010.70 |
| Total disbursements | $6,585.70 |
| Balance | $ 274.80 |

F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Bldg., Pittsburgh, Pa.

## LONDON LETTER

LONDON, April 30, 1915.

### The War

AN AUTHORITATIVE MEDICAL HISTORY OF THE WAR

Notwithstanding the tremendous strain on their energies, the authorities have shown commendable forethought with regard to the history of the war. A committee, under the presidency of the director-general of the Army Medical Service, has been formed to provide the necessary coordinating authority for the compilation of an adequate medical history of the war. For each of the chief subdivisions of the work, military and civilian members have been appointed, except in the case of the Section of Hygiene, both members of which are military. The constitution of the committee is as follows: Medicine, Lieut.-Col. O. L. Robinson and Prof. Sir William Osler. Surgery, Lieut.-Col. E. M. Pilcher and Col. F. F. Burghard. Pathology and Bacteriology, Col. Sir William Leishman and Capt. F. W. Andrewes. Statistics, Lieut.-Col. H. P. W. Barrow, Dr. John Brownlee and Lieut.-Col. W. N. Barron. Hygiene and Sanitation, Col. W. H. Horrocks and Lieut.-Col. W. W. O. Beveridge. Historical and Secretarial, Capt. F. S. Brereton and Dr. W. M. Fletcher.

DRINK AND THE WAR: GOVERNMENT PROPOSALS

In a previous letter to THE JOURNAL the effects of drink in interfering with the output of urgently required munitions of war was described. Mr. Lloyd George has brought forward proposals for dealing with it which are moderate and fall far short of the demands of the teetotal party. He could not agree to the total prohibition of whisky, as it is a beverage of particular localities, such as Scotland and Ireland, and the appearance of being unfair should be avoided. The mischief from the drinking of spirits, however, especially in its undiluted form, was incalculable. In order to restrain as much as possible the sale of spirits and of the most alcoholic beer, he proposed to levy a surtax on spirits and on all beers containing more than 7 per cent. of proof spirit. Saloonkeepers are not allowed to sell spirits without notice to the purchaser if they are lower than 25 per cent. underproof. In future the limit would be lowered to 35 per cent. underproof. Wines would be taxed on the same scale, which means quadrupling the duty. In areas producing war material there would be more control on the liquor trade, as in spite of the increased duty the men are earning such wages that they can buy quite enough to incapacitate them. There will be power to close any saloon, the presence of which is considered prejudicial to the output of munitions, the transport of material, or the discipline of the troops. As one of the causes of drunkenness is the fact that men cannot obtain reasonable refreshment near the works, there would be power to use either saloons or other premises for this purpose. There would also be power to suppress the sale of spirits and of heavy beer in these areas.

### Vital Statistics: Increase of Cancer

The report of the Registrar General on births and marriages for the year 1913 has just been issued. The delay in publication is explained by the war having decreased

the staff of workers in the department. The population of England and Wales at the middle of 1913 is estimated to have been 36,919,339, made up of 17,857,014 males and 19,062,325 females. The marriage rate for the year was 15.5 per thousand, being the same as in the preceding year, and 0.1 above the average in the ten years 1903-1912. The marriage rate in 1912 and 1913 showed an increase on those in the four preceding years. The provisional figures for 1914 indicate a further rise of 0.3 per thousand. The birth rate was 23.9 per thousand, that is, 2.4 below the average for the preceding decennium, and was, with the exception of that of 1912, the lowest on record. The provisional figures for 1914 indicate a further fall of 0.3 per thousand. The death rate, 13.7 per thousand, though higher than in 1910 and 1912, was 1.2 below the average for the ten preceding years. Infant mortality was 108 per thousand births, which was a slight increase over 1912, owing to an increase of mortality from diarrhea and enteritis. Mortality from all the principal epidemic diseases was below the average, that from typhoid fever and whooping cough being the lowest recorded. The death rate of tuberculosis was the lowest on record, and generally the mortality from diseases affecting the lungs was very low. On the other hand, cancer caused a higher death rate among both males and females than in any preceding year. The mortality among single women from ovarian cancer has been twice as great as that among the married, and cancer of the breast 45 per cent. greater; but uterine cancer shows a mortality among married women 73 per cent. higher than among unmarried women. Cancer of the breast is claiming a rapidly increasing number of victims, while uterine cancer is diminishing. As child bearing seems to increase the risk of the latter and diminish that of the former, it is suggested that the phenomenon is connected with the present decrease of fertility.

## PARIS LETTER

PARIS, April 29, 1915.

### The War

#### SANITATION OF BATTLEFIELDS

At one of the last sessions of the Conseil supérieur d'hygiène publique de France, M. J. Brissac, director of public hygiene under the department of the interior, made an important report on the sanitation of battlefields, especially the removal of dangers to health resulting from the hasty burial of the bodies of human beings and animals.

A mission of inspection ordered by the minister of the interior January 22-25 last determined that the burials of the bodies of soldiers, French, allies and enemies and of the carcasses of horses and cattle have in many cases been done under unsatisfactory conditions, sometimes by the enemy himself, sometimes by our troops, sometimes by inhabitants who have returned to their homes and sometimes under the direction of the rearguard stations and services. The haste with which in most cases these interments have necessarily been made has not always permitted the taking of the proper hygienic precautions. A large number of graves and burial mounds are too near dwelling places, sometimes only a few yards away or have been made as chance may dictate in the midst of cultivated land, or even in the ditches along the roads. In general, these graves are much too shallow. In the cases of many burial mounds, the bodies are covered by a layer of soil not over 20 or 30 cm. (6 or 10 inches) thick. Moreover, when the burial has been made in clayey or marshy soil above shallow subterranean springs, the corpse is not quickly decomposed. The consequences are likely to become serious. Not to speak of the persistent odors of putrefaction, it is inevitable that the graves scattered among cultivable lands will soon be profaned. What is most to be feared, however, is the contamination of underground springs, fountains of potable water and public or private wells.

The administration has, therefore, planned the application, as early as possible, of measures of sanitation in the zones of the extreme rear, to be extended as rapidly as the national territory is liberated. In the first place, the exact location of all the graves and burial mounds in each commune will be ascertained and the data submitted to the geologic service for study with a view of determining the exhumations necessary for the protection of potable waters and inhabited places. The best locations for hygienically unobjectionable reinterment will be determined in advance by the geologists. Wherever possible, the new graves will be grouped in the village cemeteries. The most minute precautions will be taken for the identification of the body, if possible, at the time of exhumation. A record will be kept of all the data tending to identification, and the data recorded will be communicated to the municipalities. Thus all precautions possible will be taken to comply with the legitimate desire of families to identify lost members at the end of the hostilities.

The carcasses of horses, cattle and other animals will be disposed of by treatment with quicklime.

#### THE THERMAL STATIONS AND THE WOUNDED IN WAR

It is well known that certain posttraumatic articular lesions as well as wounds that cicatrize slowly are greatly benefited by appropriate treatment with mineral waters. Many thermal stations are provided with excellent outfits of mechano-therapeutic appliances capable of doing excellent service in cases of wounds which have healed but which have been followed by functional troubles. Dr. Fluteau, director of the medical service of the sixteenth region, the center of which is Montpellier, has addressed all the head physicians of hospitals within the region, inviting them to send to Lamalou and Balaruc the wounded and sick who are capable of receiving benefit from thermal treatment such as is given at these stations. The director of the medical service has delegated a physician on the staff to arrange with the secretary general of the Institut d'Hydrologie, for the general extension of similar measures.

Dr. F. Garrigou, former professor of hydrology at the Faculté de médecine de Toulouse, has just published in the *Revue* an article in which he mentions that France possesses the richest and most varied mineral springs; the Pyrenees especially possess the most varied sanatoriums in the world within a surface of a few kilometers. It would be possible to care for thousands of patients there.

#### ASSISTANCE FOR FAMILIES OF PHYSICIANS PLACED IN NEED BY THE WAR

Many families of physicians are now without resources either because of the sudden loss of the head of the family or because they have had to flee before invasion into the interior of the country. Therefore the Oeuvre parisienne de secours immediat et d'assistance à la famille médicale decided at its last general assembly to create a fund for the duration of the war under the heading of Secours de guerre à la famille medicale (war assistance for medical families).

#### EMPLOYMENT OF GREASED TULLE FOR THE TREATMENT OF WOUNDS

Since dressings of sterilized gauze have the disadvantages of adhering to wounds and of being difficult to detach, it has occurred to M. A. Lumière of Lyons to use compresses of tulle with a mesh of 2 mm. These compresses separated from each other by paper are sterilized by heat for an hour in a mixture composed of petrolatum, wax, castor oil and balsam of Peru. Thus prepared they do not adhere to the wounds while the secretions pass through the meshes of the tulle and are absorbed by the wadding of the dressings.

#### THE UTILIZATION OF RICE FLOUR IN THE MANUFACTURE OF BREAD

Although our stock of wheat is amply sufficient for the present, it is interesting to mention a communication made during a recent session of the Académie de médecine by Dr. Maurel, professor of experimental pathology at the Faculté de médecine de Toulouse. Maurel advises the use for bread of a mixture of 20 per cent. rice flour to 80 per cent. wheat flour. Such a mixture has no hygienic disadvantages. It gives a bread with nutritive qualities approximately equal to those of pure wheat bread; the loaf, moreover, looks and tastes good.

An important consideration is the fact that our rice from Cochin China offers a means of supplying the deficit in our future harvest of wheat. Maurel believes that the country would make great economy by employing rice flour in this manner, for a million tons of rice flour would cost France only 270,000,000 francs ($54,000,000) while a million tons of wheat flour would cost 420,000,000 francs ($84,000,000).

Dr. Armand Gautier, former professor of organic and inorganic chemistry at the Faculté de médecine de Paris, approves of Maurel's suggestion and suggests that the Japanese war bread, which is the best of all war bread, contains from 10 to 12 per cent. of rice flour. This bread is not subject to attack by insects and keeps its edibility and its good taste almost indefinitely. Notwithstanding, it must be recognized that bread containing rice flour is a little less nourishing than bread composed entirely of wheat since rice contains less gluten than wheat does.

## Association News

### THE SAN FRANCISCO SESSION

#### Changes in Schedules of Special Trains

Attention is called to a change in the schedule of the American Medical Direct Route Special which has just been announced. Instead of one train leaving Chicago at 5:30 p. m. Friday, June 18, as previously stated, there will be two trains over this route: first, an extra fare train (extra fare $10), leaving Chicago Friday, June 18, at 7 p. m., and arriving in San Francisco Monday, June 21, at 10:10 a. m., and second, a train leaving Chicago Thursday, June 17, at 9:30 p. m., and arriving in San Francisco at 8:55 p. m. Sunday, June 20. The latter is a regular fare train.

The special train for San Francisco, for members of the Sections on Ophthalmology and on Laryngology, Otology and Rhinology who will be in attendance on the meeting of the American Laryngological, Rhinological and Otological Society, will leave Chicago at 8:05 p. m., June 16, instead of June 15, as originally stated. The itinerary of this train will be the same except that it will be one day later than the schedule previously announced, arriving in San Francisco on Sunday, June 20, instead of on Saturday, June 19.

For the announcement of other special trains, see THE JOURNAL, May 15, 1915, page 1707.

#### Take Extra Wraps to San Francisco

The local Committee on Arrangements desires to emphasize the suggestion already made to Fellows who plan to attend this meeting, that the mornings and evenings in San Francisco are usually windy and chilly and that there may be cold fogs. It is advisable, therefore, for visitors to provide themselves with medium-weight clothing and to have at hand suitable wraps and overcoats.

## Deaths

**Jerome Henry Salisbury, M.D.** Rush Medical College, 1878; a Fellow of the American Medical Association; died suddenly at his home in Wheaton, Ill., May 14, from cerebral hemorrhage, aged 61. He was born in Fitchburg, Wis. He was valedictorian of his class in Wisconsin University, from which he graduated in 1876; soon after his graduation in medicine he began his teaching career as professor of chemistry in the Northwestern University Woman's Medical School, Chicago, later becoming assistant professor of chemistry and then assistant professor of medicine in Rush Medical College. He also occupied the chair of medicine in the Illinois Post-Graduate School. Dr. Salisbury's contributions to medical literature were extensive and varied. His acquaintance with foreign languages, added to his knowledge of medical writings, made him a valued consultant in the editorial positions which he occupied for several years. He was coeditor with Dr. Frank Billings of the Section on General Medicine of the "Practical Medicine Series," and also coauthor with the late Prof. C. S. N. Hallberg of the "Physicians' Manual of the Pharmacopeia." He was also connected with the editorial staff of several other medical publications and since 1907 has been a member of the staff of THE JOURNAL. In the latter relationship his kindly manner and sympathetic aid won him the esteem and love of all his associates, who learned to value highly his extraordinary mental faculties and extensive medical knowledge.

**Brigadier General William Henry Forwood, M.D.,** formerly surgeon-general, U. S. Army; University of Pennsylvania, Philadelphia, 1861. In August of the same year he entered the Army as assistant surgeon, and passing through the various grades became brigadier general and surgeon-general on June 8, 1902, and was retired by operation of law on reaching the age of 64 years on September 7, of the same year. He served in the Civil War, in which he was severely wounded in battle. He also served as president of the Army Medical School and was president of Army examining boards. During the Spanish-American War he built and was in charge of the hospitals at Montauk Point, L. I. He was a Fellow of the American Medical Association, the American Academy of Medicine, the Philadelphia Academy of Natural Sciences and many other scientific bodies. He also was professor of surgical pathology in the Georgetown University, Washington, D. C., and professor of military surgery in the Army Medical School. After General Forwood's retirement he made his home in Washington, where he died, May 11, after a prolonged illness, aged 76.

**Catherine B. Patrick Slater, M.D.** Northwestern University Womans' Medical School, Chicago, 1879; a Fellow of the American Medical Association; president of the Fox River Valley Medical Association in 1901-02; said to have been the first woman physician to gain entrance to the Berlin College of Medicine; surgeon to the Aurora City Hospital and for eighteen years a member of the Board of Education of Aurora, Ill.; died at her home in that city, May 10, from cerebral hemorrhage, aged 71.

**Charles Calvin Knight, M.D.** New York University, New York City, 1855; a Fellow of the American Medical Association, and the oldest practitioner of Peekskill, N. Y., where he had practiced for more than fifty-seven years; president of the medical board of the Peekskill, N. Y., Hospital; president of the Peekskill Savings Bank and a director of the Westchester County National Bank; died at his home in Peekskill, May 5, from a ruptured aneurysm of the abdominal aorta, aged 82.

**Jay Webber Seaver, M.D.** Yale University, New Haven, Conn., 1885; a Fellow of the American Medical Association; for twenty years physical director of the Yale University gymnasium; once president of the American Association of Physical Directors and of the Society of College Gymnasium Directors; eminent as a writer on physical development and physical education; died suddenly in Berkeley, Cal., May 6, aged 60.

**Ralph Rollin Chase, M.D.** University of Minnesota, Minneapolis, 1889; a Fellow of the American Medical Association; local surgeon of the Chicago, Milwaukee and St. Paul Railway at Eau Claire, Wis.; formerly president of the Eau Claire County Medical Society; for nine years health physician of Eau Claire; died at his home, May 4, from cerebral hemorrhage, aged 54.

**Frederic Shurtleff Coolidge, M.D.** Harvard Medical School, 1891; a member of the Illinois State Medical Society and American Orthopedic Association; a specialist in orthopedic surgery of Chicago; who moved to Pittsfield, Mass., about ten years ago on account of prolonged illness due to infection from an operation wound; died in New York City, May 15, from pneumonia, aged 49.

**Robert W. Warner, M.D.** Albany, N. Y., Medical College, 1880; a member of the Medical Society of the State of New York; coroner of Herkimer County; health officer of Ilion; first lieutenant and assistant surgeon of the Thirty-first Separate Company, N. G. S., N. Y.; local railway surgeon and postmaster of Ilion from 1898 to 1906; died at his home in Ilion, April 18, aged 56.

**Bernard G. Maercklin, M.D.** University of Pennsylvania, 1887; formerly a member of the Wisconsin State Medical Society; one of the founders of the Milwaukee Medical College, in which he filled the chair of oral surgery; later professor of oral surgery in Marquette University, Milwaukee; died in the Radium Hospital, Milwaukee, April 30, from carcinoma, aged 67.

**Seth Wight Kelley, M.D.** Harvard Medical School, 1874; a member of the Massachusetts Medical Society; at one time chairman of the Woburn, Mass., Board of Health; a member of the school board and first president of the board of directors of the Choate Memorial Hospital; died at his home in Woburn, Mass., May 5, from cerebral hemorrhage, aged 66.

**George Warren Spencer, M.D.** University of Michigan, Ann Arbor, 1878; professor of physiology, dermatology and chemistry in the Cleveland Homeopathic Medical College; dermatologist to the Huron Road Hospital and a member of the general staff of the Cleveland City Hospital; died suddenly at his home in Cleveland, May 1, aged 64.

**Alpheus Butts Simmons, M.D.** University of Georgia, Augusta, 1884; an honorary member of the Georgia Medical Society and a well known and much esteemed practitioner of Savannah, Ga., who retired from practice several years ago; died at his home in Montgomery Road, Savannah February 11, from cerebral hemorrhage, aged 50.

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**William Bell, M.D.** United States Medical College, New York City, 1880; formerly a member and president of the Michigan State Board of Medicine and Registration; a practitioner of Ionia County, Mich., for more than forty years; died at his home in Belding, Mich., May 1, from cerebral hemorrhage, aged 68.

**Calvin H. Reed, M.D.** Starling Medical College, Columbus, O., 1868; a veteran of the Civil War; one of the organizers of, and professor of obstetrics in, the Northwestern Ohio Medical College; for several terms a member of the Board of Education; died at his home in Toledo, May 4, from heart disease, aged 74.

**Thomas Shriner, M.D.** Jefferson Medical College, 1869; one of the best known practitioners of northeastern Philadelphia; for forty-six years physician to the Penn Widows' Home; a member of the board of managers of the Northern Dispensary; died at his home in Philadelphia, May 2, from heart disease, aged 72.

**George Prosser Griffing, M.D.** Bellevue Hospital Medical College, 1873; a member of the Medical Society of the State of New York, and for more than forty years a practitioner of the Greenpoint section of Brooklyn; died at his summer home in South Jamesport, L. I., April 5, from heart disease, aged 62.

**Archibald Elexis McDonald, M.D.** Harvard Medical School, 1865; a member of the Massachusetts Medical Society; a practitioner of Boston for many years; at one time surgeon of the Ninth Infantry, Mass., V. M.; died at his home in Jamaica Plains, Boston, April 28, aged 88.

**William Austin Polglase, M.D.** Chicago Homeopathic Medical College, 1878; of Brooklyn, N. Y.; formerly lecturer on nervous and mental diseases in the University of Michigan; died in the Presbyterian Hospital, New York City, May 4, after a surgical operation, aged 59.

**Robert Cottington, M.D.** Rush Medical College, 1877; a member of the Wisconsin State Medical Society; a pioneer practitioner of Chippewa County, Wis., and for several years president of the Board of Education of Bloomer; died at his home in Bloomer, Wis., April 17, aged 67.

**Israel Wood Powell, M.D.** McGill University, Montreal, 1860; a member of the Legislative Assembly; first president of the Provincial Board of Education and vice-president of the Canadian Confederation League; died at his home in Victoria, B. C., February 25, aged 75.

**William Leslie McCandless, M.D.** Rush Medical College, 1872; for more than forty years a practitioner of Pinckneyville, Ill.; a banker and postmaster of that city; died in St. John's Hospital, St. Louis, May 2, from pneumonia, aged 66.

**Edward Garrett Altvater, M.D.** University of Maryland, Baltimore, 1911; assistant at the Baltimore Quarantine Station; died in the University Hospital, Baltimore, May 2, a day after an operation for appendicitis, aged 30.

**Patrick S. Donnellan, M.D.** Royal College of Physicians and Surgeons, Ireland, 1886; for several years a practitioner of Philadelphia and laryngologist to St. Agnes' Hospital; died at Twyford Abbey, London, England, recently.

**Joel Franklin Henry, M.D.** Cincinnati College of Medicine and Surgery, 1883; a pioneer practitioner of the Fruitvale section of Oakland, Cal.; died at his home in Fruitvale, May 3, from disease of the kidney, aged 74.

**Francis Button Marr, M.D.** Cleveland University of Medicine and Surgery, 1869; College of Physicians and Surgeons of Ontario, Toronto, 1871; died at his home in Ridgetown, Ont., February 19, aged 74.

**Vincent Cumming Cornwall, M.D.** Victoria College, Coburg, Ont., 1867; for a number of years reeve of Omemee, Ont., and warden of the County of Victoria; died at his home in Omemee, March 12, aged 83.

**Samuel Sylvester Selvey, M.D.** Miami Medical College, Cincinnati, 1869; a practitioner since 1856; in 1877 a member of the Indiana State Legislature; died at his home in Dunkirk, Ind., March 2, aged 82.

**Job R. Barker** (license, Ohio, years of practice, 1897); for forty-four years a practitioner of Ashtabula, O.; a veteran of the Civil War; died at his home in Ashtabula, May 2, aged 70.

**Willard Solomon Gayman, M.D.** Miami Medical College, Cincinnati, 1894; died at his home in Canal Winchester, Ohio, March 20, aged 48.

**Charles Rolph Clement, M.D.** Long Island College Hospital, Brooklyn, 1878; died at his home in Groveport, Ohio, April 30, aged 62.

**Marmaduke Allen Wood, M.D.** University of Pennsylvania, Philadelphia, 1874; died at his home in Philadelphia, April 28, aged 65.

**John H. Bell, M.D.** Jefferson Medical College, 1858; a physician and druggist of Due West, S. C.; died at his home, April 19, aged 83.

**Joseph D. Larimore, M.D.** Medical College of Ohio, Cincinnati, 1868; died at the home of his son in Muncie, Ind., April 28, aged 79.

**Gregory Arvide Martin, M.D.** University of Vermont, Burlington, 1879; died at his home in Franklin, Mass., March 9, aged 72.

**Tazewell Bradley, M.D.** Medical College of Virginia, Richmond, 1884; died at his home in Roxbury, Va., February 26.

**Clayton A. Button, M.D.** University of Buffalo, N. Y., 1888; died at his home in Holland, N. Y., February 24, aged 61.

**George Frederick Horn, M.D.** Jefferson Medical College, 1914; died at his home in Darby, Pa., April 29, from neuritis, aged 22.

**James Alfred Gaffney, M.D.** Baltimore (Md.) University, 1898; died at his home in Bridgeport, Conn., April 26, aged 39.

**Charles Wilkin Beemer, M.D.** Trinity Medical College, Toronto, 1893; died at his home in Kenosha, Wis., May 2, aged 44.

**John Cary Wells, M.D.** Cincinnati, 1855; died at his home in Birmingham, Iowa, March 6, from heart disease, aged 86.

**George W. Gregory, M.D.** Albany (N. Y.) Medical College, 1879; died at his home in Elmira, N. Y., February 26.

**Eli Wesley Fairman, M.D.** Rush Medical College, 1872; died at his home in Brodhead, Wis., March 29, aged 68.

**Francis August Schulte, M.D.** St. Louis University, 1904; died at his home in St. Louis, February 1, aged 50.

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**Correction.** The notice of the death of Dr. John D. Dickerson of Stockton, Md., which appeared in THE JOURNAL of May 1, is incorrect. Dr. Dickerson writes under date of May 10, that he does not know where the report originated.

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## *Marriages*

THERESA CHESTORA SNYDER, M.D., Chingtu, West China, to PHILIP E. HOFMANN, M.D., of Shanghai, China, at Tzechow, China, Dec. 16, 1914.

WALTER HAROLD MCNEILL, Jr., M.D., to Miss Vivian Marguerite Peck, both of Mt. Vernon, N.Y., at Bronxville, N. Y., April 14.

HAROLD WILLIAMS WILEY, M.D., South Haven, Mich., to Miss Helen G. Usher of Newburyport, Mass., at New York City, May 1.

FREDERICK A. STEELE, M.D., Oakland, Cal., to Miss Harriet Martin of Fresno, Cal., at Oakland, Cal., April 27.

GEORGE PHIPPEN SANBORN, M.D., to Miss Adalyn P. Henderson, both of Boston, at Methuen, Mass., May 7.

MABLE C. LAWRENCE FAULDS, M.D., to Mr. Henry Williams, both of Gary, Ind., at Crown Point, Ind., May 4.

ARTHUR HUSSER, M.D., Hingham, Mont., to Mrs. Bertha Rachel McCrary of Havre, Mont., April 20.

GEORGE CYRUS KINDLEY, M.D., to Miss Florence May Goodman, both of Galveston, Tex., May 18.

HERBERT T. BARNES, M.D., Pewaukee, Wis., to Miss Hazel Ryan of Fond du Lac, Wis., April 28.

WILLIAM J. CARSON, M.D., Atlanta, Ga., to Miss Elizabeth Gunning of Cumberland, Md., May 4.

HUGH P. DORSEY, M.D., Chicago, to Miss Guila Grace Chatron of Capac, Mich., May 4.

MAX WILLIAM TRENTZSCH, M.D., to Miss Leone Kreul, both of Highland, Wis., April 27.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

## VENARSEN

### Report of the Council on Pharmacy and Chemistry

The report which appears below was sent to the Intravenous Products Company for consideration. Having considered the firm's reply, the Council has authorized publication of its report along with the explanation sent by the Intravenous Products Company in reference to the variable composition reported for Venarsen, namely, that "only the first few experimental ampoules, sent to the doctors for clinical tests, were made without the Mercuric Iodide."

W. A. PUCKNER, Secretary.

This product is prepared by the Intravenous Products Company, Denver. The advertising circulars contain inconsistent statements as to its composition. According to one circular Venarsen is

". . . a comparatively non-toxic organic arsenic compound, 0.6 Gm. representing 247 Mg. (3¾ grains) of metallic arsenic in chemical combination. . . ."

According to another circular Venarsen is

". . . a comparatively non-toxic organic arsenic compound, 0.6 Gm., representing 247 Mg. (3¾ grains) of metallic arsenic and .78 Mg. (3/250 grain) metallic mercury in chemical combination."

Neither one of these statements gives any information as to the actual composition of the product. Inquiry addressed to the manufacturers elicited the reply that:

"Venarsen contains in each 5 c.c. 0.6 Gm. Sodium Dimethyl Arsenate, .0016 grams of Mercuric Iodide, .0048 grams of Sodium Iodide in solution in a suitable vehicle for intravenous administration."

The following report of the examination of Venarsen is submitted by the Association's Chemical Laboratory:

LABORATORY REPORT

Three ampules of Venarsen were examined. The first ampule was labeled

"A comparatively non-toxic organic arsenic compound, representing 247 Mg. (3¾ grs.) of metallic arsenic in chemical combination. 5 c.c. — 0.6 Gm."

Practically the same statement appeared in an advertising circular wrapped around the ampule. The second and third ampules bore labels identical with the first. The circulars differed from that accompanying the first ampule in that the presence of mercury is also announced, thus:

"Venarsen is a comparatively non-toxic organic arsenic compound, 0.6 Gm., representing 247 Mg. (3¾ grains) of metallic arsenic and .78 Mg. (3/250 grain) metallic mercury in chemical combination and is so prepared and enhanced as to present the ingredients to the blood in their most acceptable form."

Thus, although the potent elements said to be contained in Venarsen are named, its chemical character (the combination in which the elements occur) is not disclosed.

The ampules contained a transparent, odorless solution, possessing the yellow color of salvarsan solution (an aqueous solution of sodium cacodylate, mercuric iodid and sodium iodid in the amounts said to be present in Venarsen is colorless). Qualitative tests demonstrated the presence in each of the three ampules of sodium cacodylate (sodium dimethyl arsenate), and the absence of arsenites, arsenates, phosphates, arsanilates (atoxyl, soamin) and arsenphenolamins (salvarsan, neosalvarsan). Titrated with normal hydrochloric acid, using methyl orange as indicator (as outlined in New and Nonofficial Remedies, 1915, p. 40), the three ampules were found to contain the equivalent of respectively, 0.219, 0.253 and 0.216 Gm. or an average of 0.244 Gm. arsenic. (According to statements of the firm each 5 c.c. of Venarsen contains 0.6 Gm. sodium dimethyl arsenate (sodium cacodylate), equivalent to 0.247 Gm. arsenic or 41.66 per cent. Sodium dimethyl arsenate, as described in New and Nonofficial Remedies, contains 3 molecules of water and 35 per cent. arsenic. This indicates that the sodium dimethyl arsenate used in Venarsen contains less water of crystallization than the N. N. R. product).

Neither mercury nor iodid could be found in the first ampule. (The company has since explained that mercury was absent only from the first experimental samples.) The second and third ampules contained iodid and mercury in small amount. The exact quantity was not determined because, on the basis of the mercury content declared, a single accurate mercury estimation would have required the purchase of something like 25 to 100 ampules. As each ampule sells for two dollars, the cost of the material was considered prohibitive.

From the foregoing we conclude that the first ampule examined consisted essentially of a solution containing 0.625 Gm. of sodium cacodylate, N. N. R., while the second and third ampules contained 0.722 Gm. and 0.617 Gm. sodium cacodylate, respectively, and in addition, a mercury compound, probably mercuric iodid, dissolved by sodium iodid.

In other terms, Venarsen as now marketed is a simple solution containing approximately 9 grains of sodium cacodylate, 1/40 grain of mercury "biniodide" and ¾ grain of sodium iodid to each full dose.

In the past the preparation has been in conflict—especially serious because of the potent character of the drug—with Rule 1 (secrecy of composition). The manufacturers have removed this conflict by furnishing a statement of composition; and it is to be expected that they will likewise take steps to remove the manifestly erroneous impression now likely to be gathered from the circulars, namely, that the preparation is rather analogous to salvarsan. These conflicts, however, call for comment, since physicians have doubtless used the material under misapprehensions.

As to therapeutic claims, the preparation is said to be effective and safe in syphilis; "lower toxicity and greater spirochaetacidal power than other known arsenic compounds" are among the claims. No real evidence for either of these claims is presented. Sodium cacodylate has been tried as an antisyphilitic, but with indifferent success; certainly the results have not been comparable to those of salvarsan. The mercury could conceivably enhance its effect, but the dosage appears too small and the course too short for this influence to be pronounced. Moreover, a careful physician would not give arsenic and mercury in fixed proportions.

The claim of comparative non-toxicity is probable enough from what is known about the cacodylate. No physician should feel "safe," however, when injecting intravenously 0.6 gm. of sodium cacodylate every four to six days. Aside from the grave dangers of intravenous injection in general, the possibility of idiosyncrasies to arsenicals should always be borne in mind.

Finally, Venarsen is claimed to be "indicated" in pellagra, tuberculosis, anemia, etc. No evidence is presented on which to base an opinion as to its efficiency in pellagra. Those who have studied that disease would not be likely to resort to this treatment. In tuberculosis and anemia, there is no sufficient advantage in giving the cacodylate intravenously.

To summarize, Venarsen treatment consists essentially in the intravenous injection of large doses of sodium cacodylate. The other ingredients, as well as the name, merely constitute so much mystification. While the cacodylate probably has some effect on the conditions for which it is advised, there is no evidence that its value even approaches that of salvarsan in syphilis, or that the intravenous use is preferable to the ordinary methods. The dangers are manifest, although they may not be so great as with salvarsan. No justification has been established for its use in tuberculosis and pellagra.

Physicians who wish to try intravenous cacodylate administration should have a full realization of the dangers of such treatment, and in order to avoid further risks, will do well to refrain from combining other drugs with the cacodylate in fixed proportions.

It is recommended that Venarsen be held in conflict with Rule 6 (unwarranted therapeutic claims), Rule 7 (poisonous ingredients not stated on label), Rule 8 (name does not express the chemical composition) and Rule 10 (unscientific combination) and that this report be published.

# Correspondence

## Wassermann Reaction as a Clinical Test

*To the Editor:*—On page 1463 of THE JOURNAL for May 1, 1915, Dr. Heimann discusses several statements made in my contribution to THE JOURNAL of March 6. Of the many reasons for scientific discussion, that which holds the place of second importance is the speaking of different languages; and this I take to be the cause of the present disagreement.

The object of my contribution was not to enforce the generally accepted rules of Wassermann evidence, but rather to call the attention of the practitioner to a few relatively exceptional points not always clearly understood. Had Dr. Heimann written his contribution in advance of my own, I might, indeed, have taken it for a text.

Let us consider his conclusions:

"1. The Wassermann is negative at times in active syphilis, but only under definite and characteristic circumstances, and when this is understood, no confusion should arise."

Surely no practitioner could admit the universal truth of such a statement. It is well known that the gravity of the Wassermann reaction, though it usually runs almost parallel with the gravity of the known somatic lesions, does not quite parallel them. Quite recently I have seen two cases, the one with a pustular, the other with a papular skin lesion, both with negative Wassermanns, both promptly cured by antisyphilitic treatment (one verified by biopsy). By no combination of "definite and characteristic circumstances" can the negative Wassermann in such cases be predicated.

But this point is much more brilliantly illustrated by the doctor's second conclusion:

"2. The Wassermann test may be positive in the absence of syphilis, in certain other diseases, and under certain conditions easy to recognize and exclude."

So far as I know only one single series of over 100 cases supposedly nonsyphilitic and tested by the Wassermann reaction has revealed results that the reporter could fully explain. Inevitably there crops up the small percentage of cases with no vestige of the disease, but with a positive Wassermann reaction.

It has, indeed, been generally accepted that some 1 or 2 per cent. of males infected with syphilis give no early history, and the worst that has been alleged of any American or highly civilized European community is that some 10 per cent. of its citizens are syphilitic. If but 2 per cent. of these syphilitics do not know they are diseased, we may expect an error of two per thousand in our Wassermann reactions on supposedly healthy males. The actual error is anywhere from twenty times as much upward.

Dr. Heimann's final conclusion is that "matrimony should be withheld from individuals with a positive Wassermann test." With this conclusion I most heartily disagree. I recognize the dangers that threaten the syphilitic with a positive Wassermann reaction far more clearly, I think, than Dr. Heimann does those that threaten the syphilitic with a negative Wassermann reaction. Neither can be guaranteed absolutely safe from relapse in his own person. We need not pretend to disagree on the necessity of exerting every effort to make the Wassermann reaction negative, whether the patient is to be married or not. But this is purely a personal matter of fortifying the patient himself against possible relapse of his disease.

Although we all know that every lesion of syphilis is caused by spirochetes, and that sections from syphilitic tissue removed from a patient many years diseased are infectious when injected into monkeys, yet the clinical fact remains that the lapse of time sufficient to carry the patient beyond the period when he is likely to have eroded papules in the mouth or in the genitals will assure him against the possibility of infecting better than any early demolition of his positive Wassermann reaction. That syphilis may be transmitted from husband to wife after the fifth year of disease is perfectly well known as a clinical rarity, to be looked for only in those patients with persistent relapses of the secondary type; relapses that, of all others, are the most controllable by our modern methods.

But what I am arguing for is mercy to the unfortunate individual whose Wassermann reaction remains positive in spite of our most furious efforts to keep it negative. I do not feel that his positive reaction should stand in the way of matrimony after a sufficient time has gone by to protect his wife from infection.

When all is said and done, however, the difference between Dr. Heimann's point of view and my own is perhaps that infinite difference between those who are dazzled by the splendors of twentieth century science and make science a creed; regard her tentative hypotheses as certainties; her Wassermann reactions such that "no confusion should arise" in their interpretation—between them, on the one hand, and on the other hand those clinicians who, while acclaiming with great joy all the help that science can offer, do not feel that the microscope lends infallibility to the eye or the test tube to the finger. To these seekers after the grain of truth which lies hidden in the turbulent forefront of scientific progress, I submit my case.

Very possibly my contention is quite wrong, but wrong or not, I know—nothing.

EDWARD L. KEYES, JR., M.D., New York.

## Stay Stitch for Deep Wounds

*To the Editor:*—In THE JOURNAL, April 17, 1915, p. 1317, under the caption, "A New Stay Stitch for Deep Wounds," Dr. Edmond Bonnot of St. Louis describes and illustrates a stitch which I have been using for many years and which has been adopted by many of my colleagues. By some it is named for me, but it is not mine. I saw it described years ago, but have forgotten the name of the magazine and the author, remembering only that it came from one of the nearer Southern States, perhaps Virginia. I have called it the mattress suture on edge, have described it frequently while operating before my classes at Bellevue and elsewhere, and have always taken pains to disclaim any credit for its invention.

It is a useful stitch, particularly in all locations in which there is a tendency for edges to be inverted, along median depressions, over the sacrum, over the sternum, indeed, in almost any place where the skin is thick. It is also of value where the tissues are relaxed, for instance, in perineal sutures, because, no matter how much the tissues are folded, the edges cannot be turned in. As a rule, I use three or four in the ordinary celiotomy incision, afterward closing the edges of the skin with a running suture of fine intestinal silk. I think Dr. Bonnot's suggestion, that it should be tied over tubing, takes away a good deal of its value, because the tubing is liable to cause eversion of the edges of the skin, and one wants neither eversion nor inversion.

GEORGE DAVID STEWART, M.D., New York.

## Deaths from Laxative Tablets Containing Strychnin

*To the Editor:*—The coroner of Macon County reports four deaths of children in the last four years from eating laxative tablets containing strychnin; in addition to this I have knowledge of several other near deaths from the same cause. If this is the report for one county in Illinois, what must be the fatalities in the United States where the use of the favorite "A. S. B." and the "Hinkle" tablet, each containing 1/60 grain of strychnin, is so common?

The red color of the Hinkle tablet is especially attractive to children, and in one of the fatal cases reported, the victim had eaten fifteen of these tablets; the poison or caution label on the box had no deterrent effect on either the child or the careless mother. The thought occurred to me, Why put strychnin in laxative tablets, and of what value is strychnin in these combinations? Admitting the value of strychnin in repeated doses in atonic conditions of the intestines, of what value can the usual single evening dose of 1/60 grain have?

In the fatal cases also the toxic effect of the belladonna was very evident. With the large number of nonpoisonous laxatives available, such as cascara, aloin, rhubarb and phenolphthalein, there is no sense in adding the poisonous strychnin.

I am sure that the child's welfare societies can do no better work than to check this useless "slaughter of the innocents" through the use of these strychnin-containing laxative pills or tablets. EVERETT J. BROWN, M.D., Decatur, Ill.

[COMMENT.—Accidents of the character reported have frequently occurred in the past. There seems to be no remedy, except to urge greater care on the part of physicians who prescribe these preparations and on the part of parents and others who keep them on hand. It would be of decided advantage if these small but dangerous pills or tablets could be dispensed in containers—phials—of special shape, with the word "POISON" distinctly marked on the container; certainly there should be some method of marking that would definitely indicate the dangerous character of the contents. —ED.]

## *Queries and Minor Notes*

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### ACONITE IN PNEUMONIA

*To the Editor:*—Will aconite or its alkaloid break up pneumonia? J. M. OUSLEY, M.D., Lost Creek, Tenn.

ANSWER.—The older pathology of pneumonia regarded it as an intense disturbance of the circulation which eventuated in an inflammatory exudation into the alveoli of a fibrinous mass containing a large number of red blood cells and a proportionally larger number of leukocytes. The initial congestion was regarded as due to the deranged action of the heart and blood vessels. Hence it was believed by many that if we could overcome or oppose this abnormal change in the circulation, the disease could be aborted. This was the basis for the practice of bleeding in the early stages, of the use of blisters, of local bloodletting and of the administration of aconite and veratrum viride. The use of these remedies has been compared to bleeding; an old saying has it that by aconite we bleed the patient into his own veins.

With a later conception of pneumonia as an infectious disease, the use of such measures becomes less rational. We now conceive of the congestion as a reaction on the part of the general system against the presence in the lung of bacteria, some of which have usually penetrated from the alveoli into the blood accompanied by their toxins, which incite the nervous system and through it the circulation to throw out an exudate of blood to destroy the micro-organisms and neutralize their toxic products. Under this conception we do an injury and hinder the recuperative processes of nature when we attempt to hinder this application of a curative serum to the invading bacteria.

Experience has shown that pneumonia patients do as well or better without the depressing measures designed to weaken the heart and lessen the congestion, by retarding the circulation or diverting the blood elsewhere. Attempts to abort pneumonia have proved futile. Some observers have thought that they were able by means of aconite or veratrum viride to check the disease in its first stage. There is no reliable evidence that warrants such belief.

### DENTAL CLINICS

*To the Editor:*—Can you give me information as to cities in which dental clinics have been established by a board of education directly, or in connection with a board of health? Also, what success has met their efforts and what opposition has been encountered on the part of the parents? I would furthermore be interested in any details with which you might supply me in the establishment or management of such institutions. R. B.

ANSWER.—Through Dr. W. G. Ebersole, secretary and treasurer of the National Mouth Hygiene Association, Cleveland, and others interested in mouth hygiene, the following information has been obtained:

Cleveland has seven dental clinics. These are supported by an auxiliary of the National Mouth Hygiene Association and by funds raised by the principals of the schools of that city. Cincinnati has three clinics supported by the municipality. Detroit has ten clinics operated under the board of health and financed by annual appropriation. Rochester has four clinics. Formerly these were supported by the local dental society, but recently the municipality has made appropriation for the work. Buffalo has four clinics supported by the municipality. Philadelphia has several clinics supported by the city. New York City has a number of school clinics maintained by the board of education, and there are four clinics in connection with the various hospitals, maintained by cooperation of the dentists and various philanthropic organizations of that city. Morristown, N. J., has recently established a school dental clinic supported by the united efforts of the dentist and welfare organizations of that city. Several years ago the Odontographic Society of Chicago organized dental clinics in connection with a few of the schools. Later Mr. Julius Rosenwald equipped seven clinics and the dentists three others. For one and one-half years Mr. Rosenwald supported these ten clinics. In 1914 the city took them over, employing ten dentists at a salary of $100 a month each, for ten months in the year. Dr. Molt, a dentist, is a member of the board of health, and has special charge of the dental clinics.

Other clinics are being organized by the National Mouth Hygiene Association in Canton and Dayton, Ohio; Kansas City, Mo.; Louisville, Ky.; Joliet, Ill.; Washington, D. C.; Jacksonville, Fla.; Atlanta, Ga., and Lynchburg, Va.

The work of the established clinics seems to progress reasonably well, but the clinics are wholly inadequate to the needs of the communities in which they operate, since only a small percentage of the children needing dental attention in large communities can be served owing to the lack of funds and dentists. Antagonism by parents against examination and care of their children's teeth is not serious, and need deter no one from entering on this work.

Further information as to the methods of organization and management of dental clinics may be obtained from Dr. W. G. Ebersole, Secretary National Mouth and Hygiene Association, Schofield Building, Cleveland, Ohio.

### DEPENDENCE OF DISEASE ON FAULTY DIGESTION

*To the Editor:*—Has any physician of recognized authority ever stated, or intimated in any way, that from 75 to 90 per cent. of all diseases are due primarily to faulty digestion, or that a derangement of the digestive organs is the first cause of that percentage of diseases? In other words, if digestion and physical resistance were normal, would it render us immune from 90 per cent. of the present diseases?

An answer to this, or any information as to how far a derangement of the gastro-intestinal canal, and organs bearing direct relation to the same, is responsible for the onset of disease, or its first cause, will be very gratefully received. J. W. LOWE, M.D., Mentor, Ohio.

ANSWER.—So far as can be determined, no authority has published a statement that from 75 to 90 per cent. of diseases are due primarily to faulty digestion. Apparent health and good digestion are not proof against infections, since persons in robust health may fall victims to infectious diseases. An abnormal state of the mucous membrane of the gastro-intestinal tract in certain cases renders it more liable to permit the entrance of micro-organisms and toxins which may cause systemic symptoms, but there is little evidence that this abnormal condition is necessarily associated with any definable disease of the gastro-intestinal tract. It is probable that the healthy digestive tract permits the entrance of poisons in certain cases, without suffering any immediate damage. Lead may produce disorders of the nervous system, although the intestine through which it is absorbed is not affected. In the present state of our knowledge, it would be impossible to say what percentage of disease is due to imperfection in the digestive processes or disease of the digestive organs.

### SHORTENING OF THE WORD "FEEBLEMINDEDNESS"

*To the Editor:*—I have understood that among some writers the word "feeblemindedness" is being shortened to "feeblemindness." It has appeared in a recent issue of the *Survey*. Do you know of any authority for such a simplification, which seems to change the force and sense of the word? G. S., M.D., New York.

ANSWER.—We know of no authority for shortening the word "feeblemindedness" by omitting the participial suffix. As our inquirer states, such a change is a radical departure, and somewhat modifies the sense of the word.

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# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

CALIFORNIA: San Francisco, June 15-18. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

DELAWARE: Dover and Wilmington, June 15-17. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, June 15-16. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

GEORGIA: Atlanta and Augusta, June 2-4. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 24-26. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Iowa City, June 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 8-10. Sec., Dr. H. A. Dykes, Lebanon.

KENTUCKY: Louisville, June 8-10. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 3-5. Sec., Dr. E. L. Leckert, 716 Machea Bldg., New Orleans.

MARYLAND: Baltimore, June 21. Sec., Dr. J. McP. Scott, Hagerstown.

MARYLAND: Homeopathic, Baltimore, June 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MICHIGAN: Detroit, May 27-29; Ann Arbor, June 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 1-4. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 15-16. Sec., Dr. E. H. Galloway, Jackson.

MISSOURI: St. Louis, June 21-23. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEBRASKA: Lincoln, June 10-11. Sec., Dr. H. B. Cummins, Seward.

NEW JERSEY: Trenton, June 22-23. Sec., Dr. H. G. Norton, 429 E. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 25-28. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

NORTH CAROLINA: Greensboro, June 8. Sec., Dr. H. A. Royster, Raleigh.

OHIO: Columbus, June 8-11. Sec., Dr. George H. Matson, Columbus.

PENNSYLVANIA: Philadelphia and Pittsburgh, June 1-3. Sec., Dr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, July 1. Sec., Dr. Gardner T. Swarts, State House, Providence.

SOUTH CAROLINA: Columbia, June 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Austin, June 22-24. Sec., Dr. M. P. McElhannon, Belton.

VERMONT: Burlington, July 1-3. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 22-25. Sec., Dr. J. N. Barney, Fredericksburg.

WISCONSIN: Milwaukee, June 29-30—July 1. Sec., Dr. John M. Beffel, 3200 Clybourn St., Milwaukee.

### Michigan Reciprocity Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports that 18 candidates were licensed in Michigan, through reciprocity, from Jan. 11 to April 16, 1915. The following colleges were represented:

| College | Year Grad. | Reciprocity with |
|---|---|---|
| Northwestern University | (1911) | (1914) Illinois |
| Rush Medical College | (1894) New York; | (1902) Indiana |
| University of Illinois | | (1913,2) Illinois |
| University of Louisville | | (1910) Kentucky |
| University of Maryland | | (1909) Maryland |
| Harvard University | | (1909) Maine |
| Univ. of Michigan, Dept. of Medicine and Surgery | | (1910) Washington |
| St. Louis College of Physicians and Surgeons | | (1910) Texas |
| Cleveland College of Physicians and Surgeons | | (1911) Ohio |
| Miami Medical College | | (1908) Ohio |
| Pulte Medical College | | (1889) Kentucky |
| Jefferson Medical College | (1905) New Jersey; | (1912) Illinois |
| Medical College of the State of South Carolina | | (1908) S. Carolina |
| Marquette University | | (1914) Wisconsin |

### California January Reciprocity Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports that 27 candidates were licensed through reciprocity at the examination held at Sacramento, Jan. 12-13, 1915. The following colleges were represented:

| College | Year Grad. | Reciprocity with |
|---|---|---|
| College of Physicians and Surgeons, San Francisco | (1911) | Nevada |
| Columbian University | (1902) | Washington |
| George Washington University | (1914) | Dist. Colum. |
| Chicago College of Medicine and Surgery | (1910) | Penna. |
| Hahnemann Medical College and Hospital, Chicago | (1897) | Illinois |
| Northwestern University | (1906,2) (1914) | Illinois |
| Rush Medical College | (1904) (1908) Arizona; (1900) | Illinois |
| University of Illinois | (1914) | Illinois |
| Johns Hopkins University | (1902) | Montana |
| University of Michigan, Dept. of Med. and Surg. | (1907) | Michigan |
| University of Minnesota | (1891) | Minnesota |
| Barnes Medical College | (1897) | Michigan |
| St. Louis College of Physicians and Surgeons | (1906) | Illinois |
| University Medical College, Kansas City, Mo. | (1904) | Kansas |
| John A. Creighton Medical College | (1911) | Nebraska |
| College of Phys. and Surg. in the City of New York | (1906) | New York |
| Homeopathic Med. Coll. of the State of New York | (1868) | New York |
| Long Island College Hospital | (1876) | Wisconsin |
| Syracuse University | (1876) | U. S. Army |
| University and Bellevue Hospital Medical College | (1903) | New York |
| University of Buffalo | (1903) | New York |
| Willamette University | (1905) | Washington |
| Medical College of Virginia | (1914) | Virginia |

### Iowa January Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Jan. 19-21, 1915. The total number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 13, of whom 11 passed and 2 failed. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| Chicago College of Medicine and Surgery | (1914) 88, 94, | 94 |
| Hahnemann Medical College and Hospital, Chicago | (1908) | 89 |
| Northwestern University | (1911) 90; (1912) 93; (1913) | 91 |
| University of Illinois | (1914) | 89 |
| Hospital College of Medicine, Louisville | (1885) | 82 |
| Harvard University | (1915) | 90 |
| John A. Creighton Medical College | (1914) | 87 |
| FAILED | | |
| Hahnemann Medical College and Hospital, Chicago | (1909) | 82* |
| Rush Medical College | (1885) | 75* |

* Conditioned in one subject.

### Wisconsin January Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Madison, Jan. 12-14, 1915. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 19, of whom 13 passed and 6 failed, including 1 osteopath. Twenty-eight candidates, including 6 osteopaths, were licensed through reciprocity. The following colleges were represented:

| College | Year Grad. | Per Cent. |
|---|---|---|
| PASSED | | |
| George Washington University | (1907) 84; (1914) 84, | 84 |
| Chicago College of Medicine and Surgery | (1914) | 85 |
| Cornell University | (1914) | 84 |
| Jefferson Medical College | (1913) 82, | 89 |
| University of Vermont | (1914) | 82 |
| Marquette University | (1913) 75; (1914) 83; (1915) 81, | 81 |
| Queen's University | (1914) | 78 |
| FAILED | | |
| Chicago Coll. of Med. and Surg. | (1910) 59; (1914) 75;* (1915) | 73 |
| Marquette University | (1913) | 69 |
| Royal University of Genoa | (1908) | 57 |

* Conditioned in one subject.

| College | Year Grad. | Reciprocity with |
|---|---|---|
| LICENSED THROUGH RECIPROCITY | | |
| Georgetown University | (1913) | Illinois |
| Chicago College of Medicine and Surgery | (1913) | Michigan |
| Coll. of Phys. and Surgs., Chicago | (1901) (1907) (1912) | Illinois |
| Northwestern Univ. | (1903) Illinois; (1912) Missouri (1913) | Illinois |
| Rush Medical College | (1911) (1913) | Illinois |
| University of Illinois | (1913) | Illinois |
| University of Louisville | (1905) | Kentucky |
| Boston University | (1891) | Arkansas |
| Detroit College of Medicine | (1894) | Michigan |
| St. Louis College of Physicians and Surgeons | (1906) | Illinois |
| University Medical College, Kansas City | (1911) | Illinois |
| Long Island College Hospital | (1898) | New York |
| Starling Medical College | (1886) | Ohio |
| Jefferson Medical College | (1913) | Penna. |
| University of Pennsylvania | (1901) | Penna. |
| Memphis Hospital Medical College | (1909) | Tennessee |
| University of Tennessee | (1914) | New Mexico |

## Book Notices

JOHN SHAW BILLINGS: A MEMOIR. By Fielding H. Garrison, M.D. Cloth. Price, $2.50. Pp. 432, with illustrations. New York: G. P. Putnam's Sons, 1915.

If those of us who were practicing medicine twelve or fifteen years ago were asked to-day what John Shaw Billings had done to make him so well known, many of us, we feel very sure, would answer that his great life work was that connected with the Surgeon-General's Library at Washington, and with those wonderfully practical guides to medical literature, the "Index Catalogue of the Library of the Surgeon-General," its offshoot, the "Index Medicus," and the "National Medical Directory." And we would be justified in this, for he practically created that library, and was at its head for nearly a third of a century; in more senses than one, he made the "Index Catalogue," and was responsible, with the late Dr. Fletcher, for the "Index Medicus." These accomplishments are certainly worthy of commemoration. Still, these were mere incidents in the life work of John Shaw Billings, as one will realize on reading this biography.

To John Shaw Billings, more than to any other man except the donor himself, must be given the credit for Johns Hopkins Hospital and Medical School. He it was who worked out the general plans of the buildings and superintended their construction. He it was, also, who worked out the underlying principles on which the combined institutions, the hospital and medical school, should be and are conducted. He had much to do, too, with the selection of at least two of the faculty, Dr. W. H. Welch and Dr. William Osler. A most interesting chapter in this biography is that describing the founding of Johns Hopkins Hospital.

Then again, his connection with the Medical Department of the University of Pennsylvania, 1891-1896, is known to but few, and yet here he left his impress. He was selected as the director of the Laboratory of Hygiene, which he planned, and of the University Hospital. He was lecturer on, and later professor of hygiene and vital statistics. Except for the last year, his work in Philadelphia was carried on in connection with his Washington duties; but in 1895 he moved to Philadelphia, intending to make that his future home and his duties at the University of Pennsylvania his life work.

Within a year, however, he was called to do bigger things—he was invited to take charge of the New York Public Library. Simply stated, this sounds and means little; actually, the magnitude of the undertaking was stupendous. It meant the consolidation of the Astor, Lenox, Tilden and other great libraries into one, that one to be equal in magnitude and superior in arrangement to any library anywhere in the world. It meant working out a general scheme for a library whose initial number of books aggregated over 350 000 volumes, and whose ultimate number was to be "on a footing with the British Museum, with nearly two million books, or the Bibliothèque Nationale of France, with its three million." It meant also planning the buildings and overseeing, in a general way, their construction.

In 1905 "he was engaged by the corporation of the proposed Peter Bent Brigham Hospital in Boston to lay out . . . plans for suitable buildings for a hospital to accommodate at least two hundred beds, and a general scheme of organization, and details regarding its alliance with Harvard University." This work required three years, and was supplementary to that in connection with the New York library.

When the Civil War broke out, Dr. Billings was demonstrator of anatomy in the Medical College of Ohio, and was beginning to get considerable surgical practice. As his biographer says, "Billings would no doubt have become one of the leading surgeons of Cincinnati, and of the United States"; but his career, like that of thousands of others, was changed by the war. He joined the medical corps of the U. S. Army, with which he remained for over thirty years. About a third of the book is devoted to an account of his experience and work in the army. His war journals follow Grant's campaign of 1864 very closely and minutely. The finished account of the Battle of the Wilderness on pages 128 and 129 (from McParlin's report, but probably written by Billings himself) may have given some points to the later historians. While his life and work in the field were, on the average, the same as that of other army surgeons, one faculty seems to have revealed itself in Dr. Billings at the very beginning — that of organization; the opportunity was construction and management of base and field hospitals.

Few men have had a greater influence on medical education in this country. As already stated, to him as much as to any one, is due the high standard adopted by Johns Hopkins at its beginning, as well as the practical and stimulating methods of instruction inaugurated by that institution. If such a man can be said to have specialized in any branch, Dr. Billings specialized in public hygiene. At least until he undertook the great work connected with the New York library, his main efforts were expended on matters of public health.

The biography of men who have done things is always instructive and informing, especially if the biography is what it should be. This is the case here. We are given a history of the development of the Surgeon-General's Library from the day of small things to what it is today; of the growth of a small alphabetical list of books to the immense "Index" of today; of the creation and demise of the National Board of Health, which was "in a sense premature, as being forced into existence through a yellow fever scare." We are given the essential facts connected with the origin and development of Johns Hopkins Hospital and Medical School, of the Laboratory of Hygiene of the University of Pennsylvania, and of the Peter Bent Brigham Hospital of Harvard. Of much public but of less medical interest is the history of the great New York Public Library. With working up of the plans of each of these institutions, Dr. Billings went to Europe to study similar institutions of the Old World. This gave him a broad view of things, and introduced him to many of the principal workers there. We get little regarding these trips, except quotations from letters to Mrs. Billings and to a few friends; one wishes there could have been more, but evidently he was not a letter writer. One wishes also that there might have been more of the intimate life of the man in his home, among his close friends; but this, presumably, was impossible. Dr. Garrison has done a service to American medicine in giving us this account of one of the influential men in the medical profession of the United States. We believe we are not overstating when we say that this is one of the most valuable additions to medical biography and to American medical history that has thus far been made, if not the most valuable one.

THE HISTORY OF SMALLPOX IN AUSTRALIA, 1788-1908. Compiled from Various Sources by J. H. L. Cumpston, M.D., D.P.H., Director of Quarantine. Paper. Pp. 182. Melbourne: Government Printer, 1914.

Quarantine Service Publication No. 3 of the Australian Commonwealth gives a history of smallpox in that country from its settlement in 1788 to 1908. Though the records are incomplete, there is in this publication much detailed information gathered and compiled from various sources. There are recorded imperfect histories of three distinct and fatal epidemics of the disease among the aborigines since the opening of the country, and eleven epidemics among the population in the settlements. The latter epidemics have been small, the largest including only about 154 cases, and the total number of cases down to 1908 amounting to only about 500. In almost all instances the disease has been introduced by vessels plying at the various ports, though it has been endemic to a slight extent since its first introduction. The disease has been introduced 182 times in a period of eighty years. It has shown a very short range of infection, as a rule, in Australia, and actual personal contact is ordinarily necessary for infection. Interesting is the suggestion of Dr. McCrae of the Central Health Board of Victoria, in 1872, of the agency of flies in the spread of smallpox. On account of the small number of cases, the factor of exhaustion of susceptible material has not applied to Australia, and vaccination, even at present, is not compulsory in all of the states, some having practically no legislation with reference

to this measure. The history of such legislation is given in the report. Estimates made from the imperfect data available indicate that in the last fifty years about 32 per cent. of the population have been vaccinated. The effects of vaccination in the epidemics recorded are in line with the history of vaccination in other countries, the vastly largest percentage of the mortality, which has not been great, occurring among the unvaccinated, next among those not revaccinated within the recognized period of immunity, and least among the recently vaccinated or those revaccinated within a proper interval before exposure. Among the latter it is said that almost permanent immunity is attained. The report does not include the history of the last epidemic in 1913, which was, like the others, shipborne into the country.

AN INTRODUCTION TO THE STUDY OF COLOR VISION. By J. Herbert Parsons, D.Sc., F.R.C.S., Ophthalmic Surgeon, University College Hospital, London. Cloth. Price, $3.75 net. Pp. 308, with 75 illustrations. New York: G. P. Putnam's Sons, 1915.

In this book, which is the most recently published treatise on the subject of color vision, the author wisely deals with facts first and theories later. In a natural order of procedure, Part I of the book describes the chief facts of normal color vision from its physical, anatomic and psychologic bases. Then follows the spectrum as seen both by the light-adapted and the dark-adapted eye, and the various phenomena and color effects on the retina. The last section of Part I considers the evolution of color vision, including the development of color vision in the child, and containing also an interesting chapter on comparative psychology of color vision. Part II takes up the chief facts of color blindness, with brief historical references. Part III is devoted entirely to the various theories of color vision. Realizing that no theory has ever been advanced which explains all the facts of this department of science, the author takes up briefly the theories which still have followers, pointing out the strong as well as the weak features of the different ones. Researches based upon the Young-Helmholtz and the Hering theories are described. In conclusion there is briefly outlined a description of seven of the most recently advanced theories of color vision. The book is a valuable contribution to the literature of color vision, particularly because the author treats of the various theories from an absolutely unbiased point of view, which cannot be said of the majority of writers on this subject.

CLINICAL DIAGNOSIS. A Manual of Laboratory Methods. By James Campbell Todd, Ph.B., M.D., Professor of Pathology, University of Colorado. Third edition. Cloth. Price, $2.50 net. Pp. 585, with 179 illustrations. Philadelphia: W. B. Saunders Company, 1914.

The scope of this book has been enlarged and its size increased in order to permit the inclusion of many important advances in laboratory technic. Each section has been carefully revised, additions being especially made to those on sputum, urine and animal parasites. Among the newer methods noted are Weisz' test for urochromogen, Ponder's stain for diphtheria bacilli and the urease method for urea. A new chapter on serodiagnostic methods has been added by Dr. Ross C. Whitman. While this manual is not so complete as many of the works on clinical diagnosis, it is sufficiently comprehensive for the student (for whom it is intended) and for the general worker who may wish to become familiar with the more common as well as with the newer methods of laboratory examination. The text is clear and concise. The illustrations are adequate and instructive.

LEAD POISONING FROM THE INDUSTRIAL, MEDICAL AND SOCIAL POINTS OF VIEW. Lectures Delivered at the Royal Institute of Public Health. By Sir Thomas Oliver, M.A., M.D., M.R.C.P., Attending Physician, Royal Victoria Infirmary. Cloth. Price, $2. Pp. 294. New York: Paul B. Hoeber, 1914.

This book consists of lectures delivered by Dr. Oliver at the Royal Institute of Public Health, London. The author has had a wide experience and has made a special study of lead poisoning. His book will be of value to all interested in the subject. In the appendix are published the factory and work shop orders, as used in England, relating to lead poisoning.

# Medicolegal

### Malpractice in Treatment of Oblique Fracture of Clavicle—Care Required—Amount of Damages

*(Craghead vs. McCullough (Colo.), 146 Pac. R. 235)*

The Supreme Court of Colorado affirms a judgment in favor of the plaintiff for $650 damages for alleged malpractice in the treatment of an oblique fracture of the clavicle. The court says that, briefly, the defendant's treatment consisted in putting the ends of the bone in place and bandaging and holding the arm and shoulder in a position with the aid of a fulcrum, the object of this treatment being to prevent overlapping. All the surgeons called as witnesses who testified on the subject stated that the method employed was the usual and proper one to treat such a fracture. Employing the method to reduce a fracture generally recognized by surgeons as proper is not negligence. But there was substantial testimony from which to deduce one of two conclusions; either the defendant did not place the fragments in proper place in the first instance, or, if he did, he failed to exercise ordinary care from time to time to ascertain whether they remained in place and in keeping them in proper position. In the absence of a special contract, the law implies that a surgeon employed to treat an injury contracts with his patient that he will exercise reasonable and ordinary care to accomplish the purpose for which he is employed. He does not warrant a cure and is not responsible for want of success, unless it results from a failure to exercise ordinary care, or from want of ordinary skill. True, as stated in many well-considered cases, the failure to exercise ordinary care in treating a fracture is not established by proof of the result alone, but must be shown by other evidence. The original verdict was for $1,000, but, while a motion for a new trial was pending, the plaintiff filed a remittitur of $350. The court does not think that the verdict was excessive. That an operation was necessary in order to relieve the plaintiff from the condition he was in as the result of the overlapping of the fracture must be conceded. The surgeon who performed the operation testified that he made an incision down to the bone, and then by the use of instruments refractured it where the union had taken place, made a hole in each fragment, and inserted a silver wire, and wired the bones together so that they would remain in place and prevent overlapping until a new union was effected. Considering the pain and suffering, expense, and loss of time this operation necessarily entailed, and also the fact that there was sufficient testimony from which it could be inferred that the defendant had not exercised the degree of care the law required in treating the fracture, it could not be said that the verdict was excessive, or in any sense the result of bias or prejudice. The trial judge did not find that the award of $1,000 was excessive. He did not direct that the verdict would be set aside unless the plaintiff consented to remit the sum of $350. The reduction was voluntary on the part of the plaintiff. The testimony was sufficient to sustain the award of the jury.

### Insured Failing to Give Notice Because of Information Withheld by Physician—Having More than One Disease

*(National Life Insurance Co. vs. Bean (Ga.), 84 S. E. R. 152)*

The Court of Appeals of Georgia affirms a judgment for plaintiff Bean on a policy of health insurance, although he failed to give the required notice of his sickness for the alleged reason that his physician had withheld from him information with regard to it. The court says that the policy provided for the payment of an indemnity for a certain period during which the insured should be disabled by various diseases, including peritonitis. The policy also contained the stipulation: "Written notice of any injury, fatal or non-fatal, or sickness covered hereunder must be given to the company . . . within twenty days from date of accident

or beginning of illness on which claim is based, unless such notice may be shown not to have been reasonably possible, and failure to give such notice shall invalidate all claims under this policy." There was evidence that the plaintiff, who was so insured, was treated by a physician for malaria resulting in peritonitis, and was confined to his room and bed, and was unable to attend to any business for about thirty days; that information as to the nature of the disease or sickness from which he suffered was withheld from him by his physician until after his recovery; that he did not know that he had an attack of peritonitis, or that this was one of the diseases covered by his policy, until he recovered sufficiently to go to his place of business and examine his policy, which was deposited there, and thereafter interviewed his physician; that written notice of his illness was not given to the insurance company within twenty days from the beginning of the illness on which his claim was based, but was given within twenty days from the date when the plaintiff discovered what had been the nature of his illness. It is held that, under the evidence and the stipulation in the policy, the policy was not, as a matter of law, forfeited because of the failure to give the notice within the time limit of twenty days, but it was for the jury to say whether the plaintiff had given the required notice as soon as reasonably possible under all the facts and circumstances. Nor did the trial judge err in failing to charge the jury that, should they find that the plaintiff had more than peritonitis at the time he had it or preexisting the peritonitis, and that such other sickness was partly the cause of the plaintiff's being confined to his home, he could not recover the indemnity. The issue was: Did the plaintiff have peritonitis? And, if so, how long was he confined to his house and continuously and wholly disabled solely by that disease, and by no other disease? Seldom does one have a serious physical ailment not complicated by other diseases or physical disturbances; and if proof of a preexisting disease, or of some concurrent ailment, would prevent recovery for disability caused solely by another disease flowing therefrom and a consequence thereof, for and during the period when the last disease was the sole then existing cause of the disability of the claimant, a policy insuring one against certain specific diseases would be worse than valueless.

### Damages Recoverable—Need Not Submit to Operation for Nerve Tumors—Loss of Sexual Power

*(Otos vs. Great Northern Railway Co. (Minn.), 150 N. W. R. 922)*

The Supreme Court of Minnesota says that it is not disposed to further disturb the amount of a verdict in the plaintiff's favor, which was reduced by the trial court from $35,000 to $30,000. The plaintiff's left leg was amputated within 2 inches of the hip joint, so close to the body that the use of an artificial leg was impossible. There was not sufficient skin to cover the stump, and scar tissue formed. Four different operations were performed for the purpose of ingrafting skin on the stump. Several more were performed to remove cinders or to open abscesses that had formed. Two nerve tumors formed on the stump, caused by the ends of the nerves being imbedded in the scar tissue. These were intensely painful to the slightest touch, and caused intense spasms of pain on pressure or movement. From some cause, perhaps because of these tumors, the plaintiff suffered intense pain in the small of the back so that he could neither sit up nor use a crutch.

The defendant contended that there was a practical way of improving the plaintiff's condition, by removing the nerve tumors by an operation, which would remove the cause of pain in the stump and in the back, and to all intents and purposes restore the plaintiff's general health. The defendant claimed that it was the plaintiff's duty to submit to such operation, or, if he chose not to do so, the injuries which might be remedied by an operation should not be considered in measuring his damages. The court, however, is of the opinion that the plaintiff was entitled to an assessment of damages based on the condition he was in at the time of the trial. A person who sustains damage at the hands of another, whether through breach of contract or through tort (wrongful act), is required to take all reasonable measures to reduce his damage, but the court cannot carry this doctrine to the extent of holding that this plaintiff, who had already submitted to an amputation which a great proportion of men do not survive, and a lot of lesser operations, was under any obligation to submit to another surgical operation of the character described in pursuit of an uncertain prospect of lessening his injury and his damage.

There was some evidence that the plaintiff's injury had caused permanent impotence, due to the interruption of the course of certain nerves. Injury of this sort is easy to feign or exaggerate and hard to disprove. Temporary loss of sexual power is the usual concomitant of almost every severe injury or illness, and cannot usually be considered as a distinct element of damage. At the same time, when there is tangible proof that by reason of direct injury to the generative organs or the nerves that prompt their action, impotence results, no good reason exists why this element may not be considered. When the proof rests on opinion evidence, it should be closely scrutinized, but it cannot, in all cases, be rejected entirely. In this case there was evidence of injury to the pudic nerve, also that every known test indicated present impotence, and expert evidence, based on this alleged organic injury, that impotence would be permanent. The court cannot say as a matter of law that this evidence should have been wholly disregarded. However, it seems to the court that this verdict could be sustained without resting largely on this claim. Aside from this element of damage, the case was in no sense parallel to those involving the mere loss of one leg.

### Liability of Sanatorium for Negligence of Nurse

*(Pensacola Sanitarium vs. Wilkins (Fla.), 67 So. R. 124)*

The Supreme Court of Florida affirms a judgment in favor of plaintiff Wilkins for $1,000 damages for a burn on his leg caused by a hot water bottle having been left in the bed where he was a patient in the sanatorium. The court holds that, as the damages were claimed for actual negligence of a nurse who was an employee of the private corporation for profit, there was no error in excluding evidence as to the competency of the nurse, or in refusing to charge the jury as to the care used in selecting nurses at the sanatorium. In other words, where, in an action for personal injuries, the damages claimed are solely for alleged actual negligence, it is not error to exclude evidence as to the competency of the negligent employee.

### Money Paid for License Fee Not Recoverable

*(Longstaff vs. State (S. D.), 150 N. W. R. 1100)*

The Supreme Court of South Dakota sustains a demurrer to the complaint in this action, brought by the assignee of the claim of one Doran to recover from the state $500, with interest. The court says that the complaint alleged, among other things, the conviction of Doran for the violation of the statute against practicing medicine as an itinerant physician without first having obtained a license, the imposition of sentence pursuant thereto, and his appeal therefrom. That immediately after the entry of said sentence Doran, being threatened by the State Board of Medical Examiners with further prosecutions on their complaint for past violations of said law, and being by reason of said prosecution and threats of the board unable to further practice his profession in the state as his only means of livelihood pending the appeal of said case in the Supreme Court, did pay to the state of South Dakota, namely, the board of medical examiners of said state, under and in pursuance of Chapter 176 of the session laws of 1903, under compulsion and protesting the same, $500, which was the sum in the law named and designated as the license fee of itinerant physicians. That said sum was paid to the state and its said board on the express agreement, understanding and condition that it should be held subject to the decision of the Supreme Court in said

appeal, wherein it was claimed by Doran that the law requiring such payment was unconstitutional and void. That thereafter the Supreme Court, in State vs. Doran, 28 S. D. 486, held that said Chapter 176, so far as it required the payment of said license fee, was unconstitutional and void, and that the state had no power or legal right thereunder to require the payment of the same. It was contended by the plaintiff that the agreement with the board of medical examiners set forth in the complaint was valid, and that the payment of the fee by Doran was involuntary. But the court is of the opinion that the plaintiff was wrong in each of his contentions. The agreement alleged to have been made by the board of medical examiners was clearly beyond its authority. The board had no authority, express or implied, to make a binding agreement such as alleged; not only that, but it is expressly provided by law that all moneys received by the board shall be paid to the state treasurer and credited to the general fund. After the money has been so deposited, it can only be withdrawn by warrant pursuant to an appropriation.

## *Society Proceedings*

### COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, SAN FRANCISCO, JUNE 21-25.

American Academy of Medicine, San Francisco, June 25-28.
American Climatological and Clin. Association, San Francisco, June 18-19.
American Laryngological Association, Niagara Falls, June 1-3.
American Laryn., Rhin. and Otol. Society, Chicago, June 15-16.
American Ophthalmological Society, New London, Conn., July 6-7.
American Otological Society, Niagara Falls, June 3-4.
American Pediatric Society, Lakewood, N. J., May 25-27.
American Society of Tropical Medicine, San Francisco, June 14-16.
American Surgical Association, Rochester, Minn., June 9-11.
Arizona Medical Association, Prescott, June 17-18.
Maine Medical Association, Poland Springs, June 9-10.
Massachusetts Medical Society, Boston, June 8-9.
Montana State Medical Association, Bozeman, July 14-15.
Nat'l Assn. for the Study and Prev. of Tuberculosis, Seattle, June 14-16.
Nevada State Medical Association, Reno, June 17-19.
New Jersey Medical Society, Spring Lake, June 22-24.
North Carolina State Medical Society, Greensboro, June 16.
Rhode Island Medical Society, Providence, June 3.

### MEDICAL SOCIETY OF THE STATE OF NEW YORK

*One Hundred and Ninth Annual Meeting, held at Buffalo, April 27-29, 1915*

The President, DR. GROVER W. WENDE, in the Chair

#### Intestinal Stasis

DR. ALLEN A. JONES, Buffalo: Acute stasis results only when intestinal obstruction is positive and is brought about by a pathologic state causing blocking or constriction, or by a complete intestinal paralysis from some interference with the neuromuscular function of the bowel. Chronic stasis may be caused by adhesions from localized peritonitis due to gallbladder or gallduct disease, pancreatic or retroperitoneal disease, appendicitis, diverticulitis, ulcers, carcinoma or pelvic disease, veils or membranes in the ileocecal region, intestinal displacement, atony, pressure on the intestine, hernia, cicatrices, enteroliths, foreign bodies or fecal impaction and spasm, as in dynamic ileus. Postoperative intestinal stasis may occur after extensive resections, with the vicious circle, in spreading peritonitis, after ileosigmoidostomy, from the development of kinks, in cases of paralysis of the bowel, and after cautery resections from dense adhesions surrounding pockets of pus. How does enteroptosis affect or deplete health? 1. By its toxic effects. 2. By interfering with the splanchnic circulation. 3. By exciting unhealthy conditions of the colonic mucosa. 4. By its possible effect in causing appendicitis and pelvic displacement. 5. By its drag on the mesentery, causing backache and misery. 6. By its effects on the mind, the vasomotor circulation and the whole nervous system. 7. By its induction of premature old age because of its interference with the nutrition of the heart, the arteries and body musculature.

#### Intestinal Prolapse and Adhesions

DR. HENRY W. BETTMANN, Cincinnati: A certain hereditary predisposition does exist. Constitutional debility and maldevelopment play important rôles. Pregnancy, emaciation and improper dress are often the deciding influences. The early symptoms are those of atonic dyspepsia, although the prolapsed viscera may functionate perfectly and all the symptoms be absent. There is nothing at all characteristic about the early symptoms. In more advanced cases, disturbances of motor functions, headache, constipation, dragging, backache and emaciation are common. The third stage is reached when the nervous system yields and a state of neurasthenia ensues. Especial attention must be paid to neurotic children, particularly to those presenting the habitus enteropticus. Physical exercises and correct gymnastics are exceedingly valuable. Dress reform, the care of convalescence, especially when emaciation is present, and the proper attention to the abdominal walls after childbirth are all of the highest importance. General hygienic measures combined with an appropriate diet are often sufficient. Many patients are made permanently neurotic by having their attention directed too persistently to the position of their abdominal organs. A well-fitting abdominal bandage is exceedingly helpful in many cases. It is certainly not indicated in every case. In the young, corrective gymnastics are to be preferred. Massage is often helpful. As to the theory of colon stasis and alimentary toxemia, it would seem to a critical mind that the burden of proof should rest strongly on those who would have us believe that toxic materials are actually absorbed in damaging quantities from the colon.

#### Organic Obstruction of the Ileum as a Cause of Gastric Disturbance

DR. GRAHAM CHAMBERS, Toronto: The close anatomic and physiologic relationship between the stomach and the small intestine has an important bearing on the etiology of ileal stasis, for one should expect that both viscera would be affected alike by nervous disturbances. In marked cases of ileal stasis of organic origin in the lower end of the ileum characterized by high peristalsis of the ileum and impaction of the barium in the ileum against the cecum, the latter is frequently found empty, although there is frequently barium in the splenic flexure of the colon and rectum. It would appear from this that the high peristalsis in the ileum in some way brings about excessive peristalsis with the cecum. In organic obstruction of the pylorus, in the early stage at least, the same phenomena are observed. Spasm of the pylorus is a very common cause of gastric stasis. The characteristics of the pain in the region of the stomach in ileal stasis due to organic obstruction are very variable. This is probably dependent partly on the degree of stasis and partly on the nervous state of the patient. In some cases, the time of appearing after eating and the intensity and nature resemble similar characters of the pain observed in gastric or duodenal ulcer. This feature often renders it difficult to determine whether the particular state is one of intestinal stasis alone or intestinal stasis associated with peptic ulcer. Symptoms referred to the stomach in ileal stasis of organic origin are determined to a considerable extent by the associated conditions or complications. Some of the latter are diseases of the stomach itself, such as peptic ulcer; others are diseases of the adjacent organs, such as duodenal ulcers and gallstones, which are prone to produce gastric symptoms; and others again are disturbances of the nervous system, such as neurasthenia and hysteria. Any one of these may be characterized by a group of gastric symptoms.

DISCUSSION ON PAPERS OF DRS. JONES, BETTMANN AND CHAMBERS

DR. L. T. LE WALD, New York: If one undertakes to make a roentgenologic examination of the gastro-intestinal tract, he must start at the mouth and finish at the anus, and not be satisfied by giving a bismuth injection of the colon and drawing conclusions from it. I have known of at least two cases in which the colon was not the seat of the trouble. In one case, in which an ileosigmoidostomy was done, the stomach was not examined at all; but while the patient was relieved

temporarily of the gastric trouble, roentgenoscopy disclosed a serious obstruction at the outlet of the stomach. I believe a large majority of these cases have a congenital rather than an acquired element.

DR. ROBERT T. MORRIS, New York: Dr. Jones said that most of these patients suffering from chronic intestinal stasis are amenable to medical treatment. He is quite right. There is too much surgery, but also too little surgery. Half of these patients come under the observation of internists who want to give them something. If the diagnosis in these cases is made early and proper medical treatment is resorted to promptly, very little surgery will be required.

DR. J. T. CASE, Battle Creek, Mich.: Carcinoma of the colon is found particularly in two places—in the pelvic colon and in the cecum. We also find stasis in the pelvic colon and cecum, and sometimes in the right half of the colon.

### The Infected Colon and Its Surgical Therapy

DR. JOHN W. DRAPER and DR. JEROME M. LYNCH, New York: From a surgical standpoint, it is necessary to include under autointoxication not alone the lesions caused by substances formed through the vital processes of the organism, which is Coombe's conception, but also those arising from destructive infection of the bowel wall, which in a sense is not true autointoxication, but essentially a surgical disease. Surgeons can at present do no better than to find a means to prevent the absorption of the toxins from a given part of the bowel, however these poisons may have been created. Most acute and chronic purulent colonic infections are surgical from the start, and the future functional efficiency of the organ and of the individual depends on early recognition and proper treatment. Acute streptococcic embolic septic colitis, chronic torpid ulcer, slowly progressive colitis and acute diphtheroid hemorrhagic colitis yield only to surgical therapeusis. No good purpose can be served by partial removal, because the colon is, as a rule, diseased from the ileocecal valve to the anus, and no one would think of extirpation. Colonic resection, in order to succeed, must be based on surgical physiology.

What are the indications for ileostomy, what for colostomy and what for resection? Acute purulent hemorrhagic and the acute purulent inflammations of the colon differ in this respect. The first is usually a general infection of the entire colon and rectum, ending in death under ordinary treatment. There is no condition more certain to yield a brilliant result if ileostomy is done in time. Appendicostomy and cecostomy will not cure. They are inadequate, and are contraindicated because unphysiologic. Another rare condition previously treated by irrigation and medication and occasionally by colostomy is multiple polyposis. Ileostomy is the proper therapy. This lesion we believe to be secondary to an infection, and the histologic findings tend to support this view. The causative relationship of infection to polyposis is further supported by the fact that after ileostomy the inflammation subsides and the tumors disappear.

The indications for laparotomy in cases not yielding to colonic vaccines and other suitable forms of medical therapeusis are chronic intractable constipation or diarrhea plus the characteristic mental lesions, together with Roentgen-ray findings and often with slow crepitation over the cecum. Resection is indicated if a nonfused, inflamed, thickened, dilated, infected cecum, often with a mesentery studded with enlarged lymphatic glands is found. As yet we have not been able to decide positively on resection until after laparotomy. As "resection" is a vague term, not indicative of any particular technic, we have suggested the term "developmental reconstruction." This embodies the resection *en masse* at the terminal ileum, appendix, and cecocolon to the region of the middle colic artery. When completed, it places the ileocolic juncture in the position occupied before birth, which is the adult position in the dog and may be termed developmental. This operation carried a mortality which is far from negligible, and has been practiced by us only on individuals who have had years of unremitting, unavailing medical treatment and who were in every way unfit. Of a series of thirteen, 23.1 per cent. died; 46.2 per cent. were cured; 23.1 per cent. improved, and 7.7 per cent. not improved. Reaction is apt to be severe in proportion to the amount of handling in the neighborhood of the second portion of the duodenum. Reaction, if present, is apt to be delayed until after the fiftieth hour. At least one among our cured cases was unquestionably saved through the administration of autogenous vaccine.

The most careful differentiation of all colonic inflammations is necessary, not alone as to character, so far as that be possible, but particularly as to distribution. Some infections are general, others segmental; the therapeusis rests largely on this, an ileostomy being indicated for the one, a colostomy or a developmental reconstruction for the other. Many segmental infections, unless surgically treated, even though relieved and apparently cured by medical treatment, invariably relapse. Cessation of symptoms for a time does not mean cure. Such infections almost invariably end in stricture, so its preventive treatment is the early recognition and surgical treatment of the cause. Whatever the nature of the primary infection, it always becomes mixed after a short time. This principle underlies the therapy of the colon just as thoroughly as it does that of the lungs.

DISCUSSION

DR. MARTIN B. TINKER, Ithaca, N. Y.: The trend is decidedly against a complete colectomy among the progressive surgeons of the country. Ileosigmoidostomy has been discarded by the progressive surgeons of this country. On the other hand, there are a number of men who have taken up the less radical operations very similar in character to what has been described by Dr. Draper. Dr. W. J. Mayo recently advocated a very similar procedure and reported some satisfactory results. I believe this less radical procedure has a limited field of usefulness, and most of us have seen patients who are not likely to be permanently benefited by it. In many of these cases of colon infection, medical measures have been futile, and very little has been suggested in a surgical way. Ileostomy seems to be a simple thing to do, and I feel sure some of us will be inclined to try it in these desperate cases.

DR. JEROME M. LYNCH, New York: The early diagnosis of cancer is an extremely difficult problem in the hands of the best men. The Roentgen ray, except in the late cases, is not valuable. The diagnosis between diverticulitis and cancer is almost impossible in some cases. Indigestion is a very early symptom of cancer of the colon.

### Early Recognition of Cancer of the Stomach

DR. JULIUS FRIEDENWALD, Baltimore: Unless the diagnosis of cancer is made early, surgical intervention can be only in the nature of relief and not of cure. The earlier the stage of the growth, the less positive are its manifestations. Even though the disease assumes considerable proportions, many of the important symptoms may be absent, so that at this stage a correct diagnosis may be impossible. Patients developing this disease are not, as a rule, chronic dyspeptics. The most important symptoms are anorexia, vomiting, pain, hematemesis, melena and occult blood in the stools; dysphagia; loss of flesh; the presence of a palpable tumor; dilatation of the stomach; ascites and edema of the extremities; certain roentgenologic findings and serodiagnosis by the Abderhalden method. Vomiting is of frequent occurrence in gastric cancer. Pain was present in 93.1 per cent. of 1,000 cases, and extended more or less over the entire abdomen. Hematemesis occurred in 22 per cent. of cases; in 87 per cent. the hemorrhages were multiple, and in 10 single. Melena appeared in 18 per cent. of the cases. Occult blood in the stools was present in 64.2 per cent. Dysphagia existed in 6 per cent. of the cases. Loss of flesh is a sign of considerable value and occurred in 98 per cent. of the cases, the loss of flesh varying from 5 to 78 pounds. In only 30 per cent. could a mass be palpated in six months after the appearance of symptoms. Dilatation of the stomach occurred in 40 per cent. of the cases, and this condition, when present early, is of great diagnostic value. Ascites and edema of the extremities appeared in 21 per cent. of the cases.

### What Stomach Symptoms Justify Surgical Intervention?

DR. MARTIN B. TINKER, Ithaca: A reduction of the present high death rate from stomach cancer and stomach or duodenal ulcer can be accomplished only when agreement can be reached between internists and surgeons as to indications for operation. Frequently, at the onset of the trouble, the symptoms are clear and distinctive, while later the clinical picture is obscure because of the symptoms resulting from adhesions, extensive involvement of surrounding organs and impairment of general health. Common to all the chronic dyspeptic troubles, such as gallstones, appendicitis and various intra-abdominal forms of cancer, are complaints of pain, vomiting, gas and distention, burning sensations and eructation of sour or bitter material. In a number of these cases it may be possible to get the early history of pain localized in the region of the appendix or under the right costal border, more or less distinctive of appendix or bile tract involvement, while in the stomach or duodenum cases the pain is more commonly located in the epigastrium. Pain is, perhaps, the earliest and most persistent of symptoms.

Examination of the abdomen early in the disease may give valuable information. Tenderness on pressure over the ulcer, usually in the epigastrium, in the vicinity of the pylorus, when present, is very suggestive, although not nearly so constant as are the points of tenderness and pain over the appendix and gallbladder. Later on, visible peristalsis may show beginning of obstruction from developing cancer or adhesions about chronic ulcer. The cases of cancer in which definite tumor is present, Czerny many years ago pronounced inoperable; and this still holds good in the great majority of cases, but some small movable tumors are readily operable and occasionally a mass of adhesions about chronic ulcer may be mistaken for cancer and justify exploration in doubtful cases. The general appearance is also suggestive. Although there is general agreement that we cannot depend on gastric contents analysis for either a positive or a negative diagnosis, it seems to deserve a place among methods of investigation. There is a constantly growing belief in the value of roentgenologic study of the stomach. The Roentgen ray gives accurate information regarding the size, position and shape of the stomach, the acidity of peristalsis and the time of emptying.

In a series of twenty-nine personal cases in which symptoms referred to the stomach were the most prominent features, the following conditions were found: cancer of the stomach, 4; ulcer of the stomach, 2; cancer of the duodenum, third part, 1; ulcer of the duodenum, 9; perforating ulcer of the duodenum, 1; cancer of the transverse colon, near stomach, 2; chronic inflammation of the bile tract, 3; chronic appendicitis, 3; tuberculosis of the cecum, 1; movable kidney, 3. In one of the movable kidney cases the displaced kidney was adherent directly over the duodenum. While it may be impossible to arrive at a positive diagnosis in many of these cases, it is almost always possible to say that serious trouble is present inside the abdomen, and that the symptoms are of sufficient gravity to justify surgical intervention. Almost always it will be possible to determine with some degree of certainty whether the stomach and duodenum are at fault or whether the stomach symptoms are caused by lesions elsewhere in the abdomen. All modern means of diagnosis should be employed and the lesion located as definitely as possible so that in the majority of cases the operation is not really exploratory; but we may be able to attck the lesion, causing the symptoms without undue handling of the intestines or manipulation inside the abdominal cavity.

#### DISCUSSION

DR. L. T. LE WALD, New York: There is one important point in the diagnosis of gastric and duodenal ulcer which should be considered, and that is the question of syphilitic lesions. We have had eight cases at St. Luke's Hospital in the last two years which ordinarily would have been considered ulcer or carcinoma. Dr. Meyer reported a case in which he had resected for a supposed carcinoma at the pyloric end of the stomach. The patient succumbed to the operation. A microscopic examination showed it not to be carcinoma, but a syphilitic lesion of the stomach. In another case a fatal hemorrhage of the stomach ensued. The case was supposed to be one of ulcer, but it proved to be a syphilitic infiltration of the stomach.

DR. ROBERT T. MORRIS, New York: During the past two months I have seen operation performed in two cases by famous surgeons for gastric symptoms warranting operation, but nothing was found. These patients continued to suffer and were examined by an ophthalmologist and found to have eye strain. One patient improved so rapidly that evidently the cause of her trouble was eye strain. While the percentage is not large, a definite percentage of cases with gastric symptoms are cases of eye muscle imbalance, and we must get negative or positive testimony in these cases.

DR. HENRY L. ELSNER, Syracuse: Charges are brought against the internist that these cases do not reach the surgeon soon enough. A very important reason for not delivering these cases to our surgical friends is the fact that they do not come to us. The stomach is exceedingly tolerant. A man who has a slight indigestion does not promptly seek a physician. When these patients do come, over 90 per cent. of them already have a palpable tumor. They are easy of diagnosis. Careful examination proves that they have metastases of the glands. We do not need the Roentgen ray in such conditions.

DR. JAMES PILCHER, Brooklyn: Cancer of the stomach and cancer of the breast occurring in young people have a greater malignancy usually than when occurring in older people, for the reason that as a person progresses in life and reaches the age of 45, from then on the lymphatics become more or less sclerotic and do not carry metastases so fast. The older the patient is, the better chance the surgeon has for effecting a cure.

DR. CHARLES G. STOCKTON, Buffalo: When a patient represents the features so clearly described by Dr. Elsner, he is often beyond the early stage of cancer. When a man of middle age has loss of appetite, sudden disturbance of the function of the stomach for the first time in his life, and is losing weight, I would not hesitate to say that that man should submit to an exploratory operation. I feel very often that when that condition is reached, the cancer is so far advanced that our surgical friends criticize us. I believe that adenocarcinoma starting in the submucosa goes on silently, metastases begin to develop and a state of affairs is produced which we cannot recognize definitely by the means we now have. In that class of cases, the early diagnosis of carcinoma of the stomach is an accident. Occasionally we make the diagnosis, but very often we do not.

DR. PARKER SYMS, New York: The early diagnosis of carcinoma of the stomach is almost impossible, and Dr. Stockton has pointed out that it is made accidentally. The results in operating on carcinoma depend on an early attack, and if we are to assume that the early diagnosis of carcinoma of the stomach deliberately made is almost impossible, certainly deliberate surgery for the cure of this disease must fail very largely.

DR. ALLEN A. JONES, Buffalo: A very useful and simple procedure in diagnosis in gastric conditions is the thread test of Einhorn.

### The Rôle of the Superior Mesenteric Vessels in Abdominal Disease

DR. J. N. HALL, Denver: I have seen several cases of marked chronic dilatation of the upper portion of the duodenum in connection with narrowing below from the pressure of the superior mesenteric vessels, but my diagnosis in these cases has generally been that of pyloric or duodenal ulcer. One such obstruction was corrected by the performance of a duodenoduodenostomy by Dr. Freeman. The exact diagnosis is less important than a realization that a mechanical type of duodenal obstruction exists, and demands surgical relief. The exact method of relief concerns the surgeon rather than the internist. The statement of Spence and Graham that possibly the cyclic vomiting of children and the so-called hysterical vomiting may at times be due to chronic gastromesenteric ileus deserves our closest attention.

Similar obstruction may occur below the duodenum, as in a case in which operation was performed by Dr. Freeman. Under my diagnosis of partial obstruction in the middle portion of the small bowel, he had a gastro-enterostomy performed for duodenal ulcer four years before. Several feet of the upper small intestine were much distended, while below a point at which the ileum was compressed under the root of the mesentery, and the superior mesenteric vessels, the intestine was empty. The bowel was practically uninjured. The anastomotic opening was patent; the induration about the duodenal ulcer had disappeared, and everything in this connection seemed entirely normal. The appendix was removed, the adhesion separated, the patient instructed to lie in the right prone position, and a normal convalescence followed.

### Immunization Against Measles

DR. CHARLES HERRMAN, New York: Infants under 5 months of age are relatively immune, and in exceptional cases in which they are infected with the disease, it appears in a mild and atypical form. One attack of measles usually protects for life. The nasal discharge contains the virus twenty-four hours before the appearance of the eruption. Having convinced myself that infants under 5 months of age are relatively immune, I obtained the consent of a mother to inoculate her infant then 4 months old. It seems logical to assume that as the infant at that age is not absolutely immune, direct inoculation will convert a temporary into a more or less permanent immunity. At no time did the child present any evidence of injury, and I then proceeded to inoculate others. The material for inoculation was obtained from otherwise healthy children, taken twenty-four hours before the eruption of the measles appears. A small quantity of the mucus from the nose is collected on swabs of cotton. Only perfectly healthy infants under 5 months of age are inoculated. The swab is applied gently to the nasal mucous membrane. Forty infants were thus inoculated. The majority showed no distinct reaction, fifteen had a slight rise of temperature, and in a few instances a small number of spots were noted on the face or body. Of the forty patients, four over 1 year of age had come in contact with cases of measles and had not contracted the disease.

### Pyelitis: Its Clinical Significance

DR. EDWARD J. WYNKOOP, Syracuse: In girls the infection may gain entrance through the urethra more often than in boys, or it may be carried from the intestinal tract. It may occur as a complication of some other condition, or it may be an independent disease. The bladder need not necessarily be infected. The classical symptoms of chill, fever and pain in the kidneys may not be present. In relapsing cases the chill may not be repeated. In any case with irregular fever, intestinal symptoms, frequent micturition, and anemia, it is well to bear in mind the possibility of pyelitis. In examining the urine a twenty-four hour specimen only should be taken. Symptoms referable to the urinary tract and anemia should always make one suspicious of pyelitis. This is a condition more frequent than we have believed, and should be borne in mind as not every illness in children is to be attributed to the intestinal tract. In the treatment of pyelitis, I have found hexamethylenamin and potassium citrate very valuable. My preference is for the use of potassium citrate. Plenty of water and attention to hygienic rules are a great help. Vaccines have not proved as effective as we might have expected. The treatment should be persisted in as long as pus is found in the urine, even though the symptoms have disappeared.

DISCUSSION

DR. W. L. CARR, New York: In most instances, pyelitis is an infection of the colon bacillus type; but the peculiarity of the attack requires some consideration, as it does not always seem to be associated with intestinal disturbances that attract attention, nor does it always show itself after a colitis. Many of the cases are seen after influenza, and yet cultures of the urine show pure colon infection. While there is a preponderance of cases among females, there are more cases among the males than has hitherto been supposed. As the condition in the male can hardly result from an ascending infection, it is well to study more carefully the influence of the blood-stream infection. During the acute attack I use irrigations and such laxatives as are called for. The elimination of milk from the diet, if there is constipation or foul stools, is most important, and the administration of castor oil at such a time is of unquestionable benefit.

### Basal Celled Epithelioma

DR. ROBERT F. BARBER, Brooklyn: Of 200 specimens examined, fourteen showed epithelial pearls and only two epithelial bridges. They are said to spring from the germinal cells of the skin, and are described as having different potentials. These are called the cellular potential, evident in the various types of tumors, glandular potential, accounting for the cystic tumors, and the pigment potential manifested by the pigment in growths. The types are described as (1) simplest—a nest of cells in the derma; (2) alveolar, with a small amount of stroma; (3) scirrhous, with a large amount of stroma, and (4) adenomatous, with glands and cysts. The increase in the connective tissue is interpreted as evidence of inflammation. Previous lesions were called pimples in 44, warts in 5, and burn in 1, and the pressure of eye-glasses in 1. The frequency in these cases is 100 in women and 100 in men. The average age was 56 years. There were 2 cases in the third decade and 4 in the fourth decade. The average preoperative duration was six years, the greatest being twenty-eight years and twenty-five years, respectively, the shortest six weeks. The mean size of the lesion was 3 cm., the largest 8 cm.; the smallest under 1 cm.

### Cancer of the Bladder

DR. J. BENTLEY SQUIER, New York: Operative measures for cancer of the bladder are palliative, excision and resection. It is essential to remove at times ureteral vesical opening and internal meatus, and in the event of muscular invasion of the bladder by the tumor, to remove the glands as well. The vesical neck should not be resected. It is very difficult to diagnose cancer of the bladder through a cystoscope, and often impossible after the removal of a piece of the tumor. Fulguration is a method of treatment that should be resorted to in cases of benign growths.

### Hydrocephalus: Treatment by Cisterna-Sinus Drainage

DR. IRVING S. HAYNES, New York: The injection of phenolsulphonphthalein provides a means of determining something in reference to the type of case with which one is dealing and whether operation promises hope for alleviation of the condition, and also the type of operation to be performed. I have operated on twelve patients; all but two were totally blind. The only logical means of draining the cisterna is into the blood stream. This I effected by means of a silver cannula with a short and a long arm at right angles with each other. While I have been able by this method to establish drainage and in some cases to improve somewhat the contour of the child's head and to prolong life, I am by no means enthusiastic, because there seems to be little or no improvement in the mental or physical condition of these children.

DISCUSSION

DR. G. R. PISEK, New York: There are certain types of hydrocephalus, some operable and others not. If it were possible to get the child before he is damaged mentally, or after an attack of acute meningitis when hydrocephalus develops as a complication, this operation may offer hope of accomplishing something. The technic is not simple and requires a surgeon skilled in brain surgery.

DR. CHARLES W. HENNINGTON, Rochester: The operation described by Dr. Haynes seems to be in line with what we have found in laboratory work in hydrocephalus. It seems that in this operation we have the solution of the problem as to whether or not the dura and arachnoid should be punctured from the reverse side. I agree with Dr. Pisek that if these cases are brought early for treatment and the phenolsulphonphthalein test employed to determine the type of obstruction, some good results may be obtained.

## PHILADELPHIA COUNTY MEDICAL SOCIETY

*Meeting held April 28, 1915*

The President, DR. E. E. MONTGOMERY, in the Chair

## SYMPOSIUM ON EMERGENCY TREATMENT

### Convulsions

DR. GEORGE E. PRICE: Convulsions divide themselves naturally into two groups: functional and organic. While the same treatment is applicable to the majority, no one treatment will apply to all. A diagnosis, or at least an approximate diagnosis is, therefore the first essential. There are certain practical aids to diagnosis which can be obtained quickly: approximate age, general appearance of the patient, character of the convulsion, presence or absence of consciousness, of distinctive odors, such as in uremia or the odor of alcoholic excess; character of the breathing, history of prior attacks, history of traumatism, overindulgence in alcohol, and the taking of poison. When called to attend an infant in convulsions, if the "pride of the family" is not already in a hot bath, the physician should at once place the child in a warm bath or pack with an ice-cap to the head. If this does not suffice, chloroform will terminate the convulsion and bring about relaxation, which allows emptying of the bowel by a simple enema. This can be followed by the rectal administration of chloral and bromid in dose suited to the age of the patient, and as soon as the child becomes conscious, a purge such as calomel, followed by castor oil or rhubarb, should be given by the mouth. The hot bath is contraindicated if the fever is high or there are signs of lung involvement. Excellent results have been reported by lumbar puncture, which has been recommended in severe cases. Holt advocates the use of oxygen, and Sanders of morphin in place of chloroform. Oxygen is not readily procured, and I should certainly hesitate to use morphin with a small child unless every other measure had failed. In the epileptic attacks there should be no difficulty in diagnosis. If the patient is in bed, the matter of treatment is simplified; if on his feet, he should be lowered quickly to the floor; this is best done by approaching the patient from the rear, which I recommend as being safer for the attendant. A pillow should be slipped under the head, the clothing loosened about the neck, and a small article, such as a brush handle, slipped between the teeth to protect the tongue. In the average attack, no other measures are as a rule necessary. It is in the rapidly recurring attacks that other measures must be resorted to, as described in the treatment for infantile spasm. In the treatment of hysterical attacks, the room should be cleared as quickly as possible. Use suggestion; assure the family in the hearing of the patient that the condition is not serious and that the convulsion will soon cease. Quiet will often abate the attack. A hypodermic of water is sometimes effective. Inhalation of amyl nitrite is of value, especially as it makes a profound mental impression. In uremic convulsions, if the temperature is high, the patient should be placed in bed, wrapped in a sheet wrung out of water at from 70 to 80 F., and this covered by a dry blanket. If the temperature is not high, we can resort at once to the hot pack at intervals, followed, if necessary, by chloroform and the other usual remedies. Morphin should not here be used. If the blood pressure is very high, nitroglycerin in 1/100-grain doses every four hours should be given. If the patient becomes cyanotic, venesection, followed by intravenous injections of normal saline, is of value. Among other forms of convulsions, we have those of tetanus and of strychnin poisoning. In tetanus, the antitetanic serum is the chief remedy; first, intraspinally; and, after the acute stage, subcutaneously. If necessary, chloroform, morphin, chloral and bromid may all be used.

### Pulmonary Hemorrhage

DR. JOHN D. MCLEAN: Few pulmonary hemorrhages have a fatal termination. The patient should be in a half-reclining position to facilitate the easy expulsion of blood, and should be absolutely at rest, not even lifting the hand. A hypodermic injection of one-fourth grain of morphin quiets the heart action and calms the patient. If bleeding persists, repeat the dose in two hours. An ice-bag may be placed over the point of bleeding if known, but do not try to find it, and over the heart. One dram of the fluidextract of ergot may be given, but the dose not repeated. Cracked ice in the mouth is much to be preferred to salt, and will not tend to produce nausea. If the hemorrhage is large, salt solution by the bowels is desirable; but first decide whether the mental quiet will not be upset. After three or four days, examine the chest for lung involvement. The proper treatment at the first signs of incipient tuberculosis is more important than anything else. After all bleeding has ceased, the patient should continue to rest in bed for one week and should receive easily digested food, with the exclusion of tea, coffee and all alcoholic drinks. The bowels should be kept open with the proper laxatives.

### Efficient Treatment of Urgent Cases in the Hospital Accident Ward

DR. JOHN B. ROBERTS: The administrator of anesthetics and the intern who gives first aid to injured should have had at least one year's experience in practical work, and training under a superior officer accustomed to the dangers of anesthetic agents and the surgery of accident emergencies. Burns and wounds should be sterilized, and usually are better dressed dry than wet. Patients with crushed limbs should not have a tourniquet or rubber band placed around the limb far above the injured portion, because the hemorrhage should be controlled at the region already more or less devitalized. Otherwise, the surgeon when he comes to amputate after reaction of the patient, may find gangrene of flaps occur because of unwise constriction of the limb in the effort to check hemorrhage. Gunshot wounds and abdominal injuries should not be probed, nor should enemas be given to patients with suspicious traumatisms to the abdomen, lest a ruptured intestine allow the enema to flow into the peritoneal cavity. It is possible that many fingers have been unnecessarily amputated because a young intern did not realize that a plastic operation could be used to cover bones stripped of integument. Acute abscesses and furuncles should be treated by incision to evacuate pus, but should not be plugged with gauze. Gauze does not drain pus, but becomes dry, and obstructs the opening like a cork. Therefore, it causes pain by increasing tension. Open fractures should be sterilized and treated with retentive apparatus. It is unnecessary to do spinal puncture to establish the diagnosis immediately of brain injury. Examination of the spinal fluid is frequently unnecessary, and when necessary, puncture should be done with absolute asepsis and by a trained hand, two essentials difficult to obtain in the usual accident room in charge of an inexperienced resident physician. The usual fracture of the lower end of the radius should not be treated with a splint until thorough reduction has been accomplished. Fractures of the neck of the femur should not be exposed to active manipulation in the endeavor to make a diagnosis. This is particularly true in these fractures occurring in the old, in whom impaction is frequently a blessing in disguise.

### Compound Fractures

DR. GEORGE P. MULLER: Compound fractures of the skull may involve the vault or the base. Fractures of the base require no immediate treatment, except cleansing and protection of the openings leading to the cranial cavity. The ear after cleansing should be plugged with gauze. These fractures occasionally require a decompressive operation. I agree with Dr. Roberts that spinal puncture for the determination of blood in the spinal canal in such injuries is rarely necessary. In compound fractures of the vault, we usually have comminution or decompression of the fragments, and the immediate treatment differs in no way from the emergency treatment of fracture of other bones. In fractures of the lower jaw, a chin-trough and a Barton bandage and a mouth wash constitute the emergency treatment, to be followed by reduction and the use of a perfectly fitting interdental splint. In compound fractures of the long bones, we are confronted with various degrees of fracture. The most

important duty of the physician first called to attend a compound fracture is simply to put a sterile dressing over the site of injury, and firmly hold it in place by a bandage. Tincture of iodin may be poured into the wound, but beyond this nothing else should be done. If shock is to be treated, the common habit of injecting strychnin is to be condemned. Morphin should be given, to be followed by heat and the head-down position, and the use of saline solution as soon as convenient. Some of these cases will come under the care of the family doctor. The patient should be anesthetized, the limb raised and the bed or table covered with the rubber sheeting, on top of which is laid a sterile sheet or towels. The entire limb is painted with tincture of iodin, and the first-aid bandage cut off and the dressing removed. The remainder of the limb is painted with iodin and the limb laid down on the sterile sheet. Foreign bodies should be removed. The wound will usually require enlarging. Small pieces of bone should be removed, but large pieces preserved. Shreds of tissue should be cut away, and the entire cavity of the wound, particularly the ends of the fragments, should be swabbed with tincture of iodin. It is essential that every open space be reached by the iodin. Provision should be made for drainage with small pieces of rubber dam. The advantage of dependent drainage should be remembered, and counter openings made where feasible. Partial closure of the wound is done, and then the fracture should be carefully and accurately reduced. The rubber dam may be removed in some cases at the end of twenty-four hours; in others it may be necessary to replace it with rubber tubes. The various fractures will be splinted in accordance with their locality. I was much impressed by a recent article advocating no splint in compound fracture of the humerus, simply slinging the wrist close up to the neck and using the weight of the elbow as an extending force during the time that daily dressings are necessary. Most compound fractures of the leg should be treated by a swinging splint, such as the Hodgson or one of its modifications. I do not like plaster of Paris as an early dressing, and never use the circular bandage unless the wound is mostly healed. If plaster of Paris is used, the cast should be covered with shellac, and after making the opening over the wound, a mixture of cotton and rubber should be packed between the plaster and the skin so as to seal off the limb from the wet dressing and discharge. It will be necessary to plate certain fractures, but that should be done only in a hospital and by one who has the proper armamentarium and technic. Drainage should be removed gradually. It is the emergency treatment that determines the amount of infection and the necessity for secondary operation.

### Emergency Treatment of Ruptured Uterus and Ruptured Ectopic Pregnancy

DR. RICHARD C. NORRIS: The obstetric emergencies—rupture of the uterus and of ectopic pregnancy—practically become a discussion of the conservative versus the radical treatment of these two conditions. Rupture of the uterus is said to occur once in from 1,000 to 4,000 labors. Untreated, the maternal mortality is 90 per cent., the infant mortality, 95 per cent. Under appropriate treatment the mortality has been reduced to 50 or 60 per cent. The violence of operative procedures when the uterus is firmly contracted, or failure to recognize an obstacle to labor, has been the cause, with one exception, of all the cases of rupture during labor that I have seen in twenty-five years of active obstetric work. When a multipara suddenly recognizes a sharp, tearing pain, and labor pains cease abruptly, accompanied by the rapid appearance of signs of hemorrhage and shock; when, after an attempt at version for a cross-birth the patient falls into collapse, the merest tyro in obstetrics should recognize at once this most serious calamity of labor. The indications are to deliver the child and control hemorrhage and prevent infection. My advice to the man of average experience with operative obstetrics is to weigh carefully the well-known danger of moving the patient to a hospital, to note the degree of shock and collapse, and if provided with the means of surgically clean work, to examine carefully to learn the location and extent of the rupture and decide whether he is capable of delivering the patient and applying the conservative treatment by tampon. This work demands the best surgical technic. Like all the emergencies in obstetrics, if the first aid fails to protect from infection, the subsequent skill called to the case may utterly fail to save the patient. Even temporary control of hemorrhage cannot be accomplished until the child is delivered. If the greater part of the fetus has escaped into the abdomen, nothing short of an abdominal operation can be considered, and treatment in the hospital offering the promptest aid is necessary. If the child is still in the uterus and the rupture has occurred during attempts at delivery, if the head is within reach, apply the forceps, perforate the skull of the dead fetus and carefully extract it. Deliver the placenta manually at once. Explore the rent carefully to avoid a complete rupture. Firmly tampon the rent after applying tincture of iodin to it; then the entire uterine cavity and vagina should be firmly plugged. If the laceration is on the anterior wall, suspect injury to the bladder. Hold the uterus anteflexed by a firm abdominal binder and pad. If the rent is on the posterior wall, retroflex the uterus and hold it thus by the pad and binder. If the bladder has been torn, introduce a self-retaining catheter. Freely stimulate the patient only after reaction has appeared, giving first and at once salt solution in moderation by hypodermoclysis and enteroclysis. The tampon in the uterine tear may remain in place not less than seventy-two hours, when it may be gently removed, and if necessary, replaced. The danger of transporting a patient with rupture of the uterus is a very grave one, and the statistics of treating incomplete rupture and small complete ruptures warrant this conservative treatment at the bedside of the patient, in clean cases treated by a clean obstetrician. Cases badly shocked show a high mortality from operation; and this conservative treatment, temporarily used, may make operation after reaction much safer in such cases. Cases that come to section may sometimes be safely treated by suture of the uterus, but usually will be more safely treated by hysterectomy, and the cervical stump should be made extraperitoneal by suture in the lower angle of the abdominal incision, if the prior handling of the case presupposes infection.

Contrasting the conservative treatment of ruptured ectopic pregnancy with the prompt surgical treatment by laparotomy, there is in my judgment less to be said in favor of the conservative treatment. A diffuse hematocele of small size that sometimes follows tubal abortion from the fifth to the seventh week in which a tubal mass cannot be felt, and the clinical signs of continued bleeding are not present, may be treated expectantly with the hope of ultimate absorption of the blood mass; but these cases are rare. Intravenous transfusion of salt solution even during transit to hospital has saved many desperate cases in my hands. A quick, clean section, exsection of the offending tube, removal of the large blood-clot by sponging, and rapid closure without drainage is the usual operation of choice. The mortality rate of ruptured ectopic pregnancy under surgical treatment varies from 3 to 4 per cent.

DISCUSSION

DR. JOHN C. HIRST: I think we have all seen after delivery in a rather hard long-delayed labor with or without instruments a moderate amount of postpartum hemorrhage with an immoderate amount of shock. These cases are often due to rupture and incomplete rupture of the uterus in the lower uterine segment going up behind the bladder and not through the peritoneum. The cervix is split so that you can feel the ring posteriorly and feel nothing anteriorly, and above that can be felt the contracted internal os. Here there is apt to be prolonged and fatal hemorrhage with infection of both sections of the broad ligament. A case of that kind does not, as a rule, require operation, but careful packing. Many of such cases come to us infected which could have been saved by early packing removed every twenty-four hours. Two weeks are usually sufficient to control as a case of that kind. Under such conditions I have seen two cases of rupture in the last two weeks by the immoderate use of pituitary extract in which the cervix was thought to be

easily dilatable. There is a tendency to forget the expulsive action of pituitary extract, and a full dose under these circumstances is apt to produce this accident. If the symptoms of rupture justify the diagnosis of rupture before the head has passed down to the vagina, I believe such a patient is safer if moved to the hospital with the baby undelivered, as the child acts as a plug to prevent bleeding and prevents also prolapse of the intestines. In the undoubted rupture of extra-uterine pregnancy, I think we cannot emphasize too strongly the need of immediate operation in the very great majority of cases.

DR. JOHN M. FISHER: I am reminded of a patient with ruptured ectopic pregnancy operated on by the president of this society at the Jefferson Hospital. The woman was supposed to be in a dying condition. She was pulseless when placed on the table. She was given an intravenous injection of salt solution, and although she was gasping for breath at the time of operation, she made a rapid recovery. The case made me feel that there is no time that we may consider a patient so far gone from internal hemorrhage in ruptured ectopic gestation that operation is contraindicated. The point of importance is not the ruptured ectopic pregnancy at the time of rupture, but the making of the diagnosis after the rupture has occurred. In many cases which I have seen, diagnosis was not made previous to operation, and in reviewing the history there should have been no doubt of the condition.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

*May, CXLIX, No. 5, pp. 625-780*

1 *Experimental Study in Exclusion (Functional) of Pyloric Antrum. W. Bartlett, St. Louis.
2 *Gastric Headaches. W. F. Cheney, San Francisco.
3 *Use of Dahlia in Infections. J. Ruhräh, Baltimore.
4 Tuberculosis in Aged. J. B. Hawes, 2d, Boston.
5 *Generalized Telangiectasia in Association with Syphilis, with Pathologic Picture of Peripheral Vascular Sclerosis. J. H. Stokes, Ann Arbor, Mich.
6 *Use of Strychnin in Broken Cardiac Compensation. L. H. Newburgh, Boston.
7 *Multiple Neuritis as Complication or Sequel of Typhoid. T. A. Claytor, Washington, D. C.
8 Postoperative Nervous and Mental Disturbances. J. M. Aikin, Omaha, Neb.
9 Study of Urinary Nitrogen and Sulphur Partition in Case of Rheumatoid Arthritis Treated with Intravenous Injections of Radium Salts. J. Rosenbloom, Pittsburgh.
10 Case of Endocarditis of Pulmonic Valve Caused by Micrococcus Endocarditidis Rugatus. G. R. Callender, U. S. Army.
11 Herpes Zoster of Cephalic Extremity, with Special Reference to Geniculate, Auditory, Glossopharyngeal and Vagal Syndromes. N. Sharpe, New York.
12 Case of Pilous Cerebral Adiposity; New Syndrome. W. M. Kraus, New York.

1. **Exclusion of Pyloric Antrum.**—Bartlett has excluded the pyloric region twenty-seven times on the human subject. The first fifteen patients were operated on by transverse section of the stomach with blind closure, as first suggested by Doyen, with which no other method has been definitely proved experimentally to compare in efficiency. These experiences convinced Bartlett that the technical difficulties and dangers attendant on this procedure warranted experiments, looking toward a simpler and safer method which could guarantee the same result. The details of his experiments are given at length.

2. **Gastric Headaches.**—Cheney calls attention to headaches due to disturbance of the stomach; to the fact that they are not an infrequent occurrence; that they present characteristics which fairly well identify them; that it is possible by stomach investigation in these cases to prove the existence of gastric disorder, as well as by other examinations to exclude disease elsewhere; and that the headaches can be made to disappear by therapy directed to the underlying gastric disturbance. The headaches due to gastric disease are usually periodic. They repeat themselves throughout months or years. They may occur but once in a month, or once or several times in a week. Over certain periods they may become practically constant, during which periods headache is never entirely absent, though worse or better at certain times in the day. But the most common story is of sudden unexpected attacks of pain in the head, coming after days or weeks of good health. Such headaches, Cheney points out, are of variable duration, but rarely last over twenty-four hours. The patient wakens with the pain in the morning, and it grows more intense as the day goes on; or it may come on in the evening, persist during the night, and pass off after the patient rises. These headaches may be so severe and prostrating as to incapacitate the sufferer for any kind of work while they last; but more often they are not so violent as to prevent the patient from going about his usual occupation, even though he feels miserable and unfit. Sometimes nausea and vomiting accompany the pain, giving rise to the popular term "sick headaches"; but in other cases there may be no disturbance whatever of the stomach to make the digestive organs even suspected. The attack results in no disturbance of health, unless it be a sense of soreness over the scalp at the site of previous pain and a feeling of mental unclearness and confusion; but these sensations are transient and the paroxysm is usually followed by complete restoration to normal. Repetition of these attacks may go on indefinitely before the real cause is discovered.

The most common type of pain is hemicrania, though not always on the same side. The pain is described as boring in character, through one eye or temple; or it may be the entire half of the head, even back to the base and the nape of the neck, that aches and throbs while the opposite side is entirely free from discomfort and as clear as ever. But this one-sided headache is caused frequently by the autointoxication of chronic intestinal stasis; it is the characteristic type of the paroxysm known as migraine; and it sometimes occurs as a manifestation of uremia. On the other hand the headache of gastric origin often involves the whole forehead and vertex with a throbbing distention and fulness, not limited to any one area; so that it becomes absolutely impossible to construct any diagnostic chart of headaches, as has been attempted, in which certain locations of pain serve to determine infallibly the diseased organ giving rise to the pain.

In the diagnosis of gastric headaches, the history makes one only suspect, the gastric analysis makes one reasonably certain; but only after elimination of all other possible causes can this one be accepted as the basis for therapy. Laxatives alone do not remove the symptoms; a proper diet seems the essential feature in treatment, the determination of what is proper depending on investigation of the gastric functions. This arrangement of dietary with other measures to overcome gastric atony and faulty secretion are often sufficient to regulate the bowels without the addition of laxatives.

3. **Use of Dahlia in Infections.**—Ruhräh says that a saturated (about 4 per cent. solution) can be applied to the mucous membranes of the throat or in fact other parts of the body without producing either pain or subsequent irritation. The drug seems to penetrate only to short distances and for the deeper seated affections has no value, but for superficial involvement of the mucous membranes whether the infection is due to streptococcus or to other organisms the effect is quite striking. In some cases but little effect is noted, it is true, but in others there is marked lessening of the intensity of the inflammation and coincidently a marked lessening of the constitutional symptoms. It has the advantage over other applications in that it is not painful, does not produce irritation and is markedly antiseptic. The only disadvantage is the color, which will stain fabrics with which it comes in contact, although most of these stains can be removed if the garment is immediately washed out in cold water. For ulcerations about the mouth it may be used either by applying a saturated solution or a mouth wash varying in strength from 1:1,000 or 1:10,000 may be used. The stronger solutions need not be used very frequently. The dahlia not only kills the offending organism but it has a marked stimulating effect on the healing. Externally on skin surfaces the drug may be used with marked benefit, particularly on ulcerations.

Ruhräh has used it with remarkable benefit on vaccinations which were slow in healing, and on other abraded surfaces, especially those which are infected.

5. **Generalized Telangiectasia with Syphilis.**—Cardiovascular degenerative conditions, among which syphilis is most conspicuous in Stokes' opinion appears to stand in etiologic relation to a considerable percentage of the obscure dermatoses heretofore grouped under the meaningless terms "essential," "idiopathic," and "primary" telangiectasia. The conception of a low-grade inflammation due to definite etiologic factors, such as syphilis, lead, alcohol, hyperthyroidism, etc., forms a more substantial starting point for further study than relatively intangible angioneurotic theories of the etiology of generalized telangiectases. Much of the existing confusion in the classification of telangiectatic cutaneous lesions is ascribed to over reliance on purely clinical data, whose value as exclusive criteria in these cases is open to grave doubt.

6. **Strychnin in Broken Cardiac Compensation.**—Newburgh states positively that neither pharmacologic nor clinical evidence justifies the use of strychnin in the treatment of acute or chronic heart failure.

7. **Multiple Neuritis and Typhoid.**—Claytor collected from the literature twenty-five cases which are sufficiently fully described to be of value, which, with his own, make a series of twenty-six. Symptoms of the condition were recognized during the course of the fever in 14 instances; after the fever had subsided, in 12. The earliest was the second week of fever. It is impossible from the data to say what the longest period after apparent complete recovery at which the symptoms of neuritis first appeared, but usually it was a few days to a week after the temperature had become normal. Pain was present 17 times, absent 9 times. There was altered sensation in 19, no change in 4, and no mention of this condition was made in 3 instances. Paralysis was noted 25 times; in one case it was not mentioned. The reflexes were lost in 9, exaggerated in 4, diminished in 2, normal in 1, and not noted in 1. There were no contractures in 20, while in 6 they were noted. The cranial nerves were involved in 7, not affected in 19; the spinal in 24, not so in 2, while both were affected in 5 cases. Fourteen cases showed atrophy, 2 none; in 10 there was no mention made of the condition. The duration varied from three months to fourteen in which complete recovery occurred. Unqualified recovery took place in 11, improvement in 7, death in 2, and the result was not given in 6 cases. It must be remembered, however, that many of these reports were probably made before the final result was known, and it seems likely that quite a fair proportion of those recorded as improved ultimately recovered.

### American Journal of Physiology, Baltimore

*May, XXXVII, No. 2, pp. 177-451*

13 *Experiments on Origin and Conduction of Cardiac Impulse. Relation of Nodal Tissue to Chronotropic Influence of Inhibitory Cardiac Nerves. B. H. Schlomovitz, J. A. E. Eyster and W. J. Meek, Madison, Wis.

14 Axial Gradients in Early Development of Starfish. C. M. Child, Chicago.

15 *Analysis of Experimental Edema in Frogs. A. R. Moore, Bryn Mawr, Pa.

16 Studies on Light Production by Luminous Bacteria. E. N. Harvey, Princeton, N. J.

17 *Cardiac Inhibition During Vomiting Evoked by Stimulation of Gastric Vagus. F. R. Miller, London, Canada.

18 Macrophages of Mammals. H. M. Evans, Washington, D. C.

19 Threshold Stimulus of Cervical Sympathetic in Relation to Vasodilatation, Vasoconstriction and Salivary Secretion. C. M. Gruber, Philadelphia.

20 Studies on Intestinal Rhythm. W. C. Alvarez, San Francisco.

21 Studies on Permeability of Internal Cytoplasm of Animal and Plant Cells. G. L. Kite, Chicago.

22 Influence of Eye-Movements in Judgments of Number. R. MacDougall, New York.

23 *Physiology of Stomach. Cause of Variations in Gastric Hunger Contractions with Age. T. L. Patterson, Baltimore.

24 *Diurnal Variations in Arterial Blood Pressure. A. W. Weysse and B. R. Lutz, Boston.

25 Conditions of Conduction of Excitation in Irritable Cells and Tissues and Especially in Nerve. R. S. Lillie, Worcester, Mass.

26 *Analysis of Nitrous Oxid for Physiologic Work. W. M. Boothby and I. Sandiford, Boston.

27 *Effect of Work on Percentage of Hemoglobin and Number of Red Corpuscles in Blood. W. N. Boothby and F. B. Berry, Boston.

28 *Determination of Circulation Rate in Man at Rest and at Work. W. M. Boothby, Boston.

29 Late Effect of Division of Pulmonary Branches of Vagus on Gaseous Metabolism, Gas Exchange and Respiratory Mechanism in Dogs. W. M. Boothby, Boston, and V. N. Shamoff, Petrograd, Russia.

30 Distension of Lungs; Its Effect on Respiration in Man and in Normal and Vagotomized Dogs. W. M. Boothby and F. B. Berry, Boston.

13. **Relation of Nodal Tissue to Cardiac Inhibition.**—This work is offered by the authors as leading confirmatory evidence to the hypothesis of chronotropic vagus action previously put forward, namely, that the vagus produces its chronotropic effect on the heart by local depression of automaticity in the nodal tissues, causing the seat of impulse initiation to undergo progressive shifting to regions of lower automaticity.

15. **Experimental Edema in Frogs.**—From the experiments described by Moore it seems clear that, in the normal frog, the water which is being continually absorbed through the skin is removed by the lymphatics and veins. When a limb is completely ligated, liquid rapidly accumulates under the ligature. This liquid is composed of transudate and of water absorbed through the skin by osmosis. Removal of the superfluous liquid is prevented because both veins and lymphatics are closed. The lymph therefore tends to become more and more dilute and the muscle correspondingly swollen with the continued absorption of water. In short, the phenomena of edema develop below a complete ligature because lymph and tissue take up water osmotically, and the avenues for its removal are blocked. In the case of edema produced by a lymphatic ligature, the lymph formed in the normal fashion is retained while the absorbed water passes into the capillaries and is removed.

17. **Cardiac Inhibition During Vomiting.**—It appears from Miller's experiments that in the dog the vomiting center when active is able to influence the cardio-inhibitory center in a powerful manner. The fall in blood pressure during vomiting in the dog, while, no doubt, in part produced by the factors effective in the cat, is materially increased by cardiac inhibition.

23. **Gastric Hunger Contractions.**—According to Patterson the variations in the gastric hunger contractions are dependent on two factors, namely: The actual age of the stomach and the rate of metabolism of the animal. The latter seems to be of the greater importance in determining the activity of the gastric motor mechanism.

24. **Diurnal Variations in Arterial Blood Pressure.**—Weysse and Lutz found that a rise of maximum pressure averaging 8 mm. Hg occurs immediately on the ingestion of food. A gradual fall then takes place until the beginning of the next meal. There is also a slight general rise of the maximum pressure during the day. The average maximum blood pressure for healthy young men in the neighborhood of 20 years of age is 120 mm. Hg. This pressure obtains commonly one hour after meals. The higher maximum pressures occur immediately after meals, and the lower, as a rule, immediately before meals. The range of maximum pressure varies considerably in different individuals, but the highest and lowest maximum pressures are practically equidistant from the average pressure of any one individual. The minimum blood pressure is very uniform throughout the day, and is little affected by the ingestion and digestion of meals. When it is affected a rise or a fall may take place. There is a tendency for a slight general lowering of the minimum pressure throughout the day. The average minimum blood pressure for healthy young men in the neighborhood of 20 years of age is 85 mm. Hg. Thus the authors get an average pulse pressure of 35 mm. Hg. Pulse pressure, pulse rate and the relative velocity of the blood flow are increased immediately on the ingestion of meals. They attain the maximum, as a rule, in half an hour, and then decline slowly until the next meal. There is a general increase in each throughout the day. The average pulse rate in the authors' investigations proved to be 72 beats per minute.

V. 19

26. **Analysis of Nitrous Oxid.**—The details are given by Boothby and Sandiford of analysis of nitrous oxid by the method of combusting with hydrogen with the use of a modified Haldane apparatus.

27. **Effect of Work on Hemoglobin and Red Cells.**—Experimental data are given by Boothby and Berry showing that the percentage of hemoglobin and the number of red blood corpuscles, and therefore the oxygen carrying capacity of a unit volume of blood, are increased under conditions of work, causing an appreciable amount of perspiration. If no perspiration occurs there is no such increase.

28. **Circulation Rate in Man.**—A series of sixty-one determinations of the blood flow in one subject at rest and at various degrees of work are reported by Boothby. It is shown that the circulation rate increases proportionately with the oxygen consumption in a manner corresponding to the increase in the total ventilation. It is suggested that the main controlling factor in the regulation of the circulation rate is the hydrogen-ion concentration of the arterial blood and that this regulation is one of great delicacy. By comparing the increase in the circulation rate with the increase in the total ventilation, Boothby was able to estimate that on the subject studied an increase in the blood flow of 3.3 liters per minute, which is a doubling of the circulation rate, is caused by a rise in the total acidity of the blood corresponding to 2.0 mm. of carbon dioxid. This figure would correspond to a rise in the hydrogen-ion concentration of the arterial blood of about $0.013 \times 10^{-7}$.

### Archives of Ophthalmology, New Rochelle, N. Y.

*May, XLIV, No. 3, pp. 221-368*

31 Discrete Lymphoid Infiltration of Orbit. G. Coats, London.
32 Lymphoma and Lymphosarcoma of Conjunctiva. G. Coats, London.
33 Anomalous Nerve Heads with Good Vision. M. Goldenburg, Chicago.
34 Plasmoma of Lacrimal Sac. F. H. Verhoeff and G. S. Derby, Boston.
35 Acute (Bacillus Tularense) Conjunctivitis. R. Sattler, Cincinnati.
36 Removal of Eyeball. H. S. Gradle, Chicago.
37 Changes in Blood and Aqueous Humor in Methyl Alcohol Inhalation. H. H. Tyson and M. J. Schoenberg, New York.
38 Pathology of Bell's Phenomenon. E. Kraupa, Prague, Germany.
39 Case of Bilateral Acute Serous Tenonitis. F. Pincus, Cologne, Germany.

### Boston Medical and Surgical Journal

*May 6, CLXXII, No. 18, pp. 657-692*

40 Tuberculosis Work in Connecticut, Its Development in Last Decade and Its Future Needs. D. R. Lyman, Wallingford, Conn.
41 *Rare Type of Bladder Ulcer in Women; Report of Cases. G. L. Hunner, Baltimore.
42 Epididymotomy for Acute Epididymitis, as Out-Patient Procedure. A. H. Crosbie and A. Riley, Boston.
43 Leprosy; With Especial Reference to Pulse and Temperature. J. A. Honeij, Boston.
44 Case of Autotransplantation of Bone for Nasal Deformity Due to Syphilis. L. Arkin, Boston.
45 Myxedema Simulating Nephritis. W. D. Reid, Newton.

41. **Bladder Ulcer in Women.**—In the eight cases cited by Hunner the ulcers were all found in the vertex or summit of the free portion of the bladder; this being one important distinction in comparing the simple solitary ulcer of Fenwick which is found on the base or fixed portion of the bladder. In three of the cases the ulcer was well forward, just back of the symphysis; in four, it was in the summit, with a tendency in three of them to occupy the posterior pole region, while in one case there was an ulcer area near the posterior pole, and another on the left anterior wall immediately back of the symphysis. A chief characteristic of these ulcers is the extremely slight mucous membrane change found in certain periods of the ulcer.

The ulcer area may easily be overlooked and the attention may first be arrested by an area of dead white scar tissue. In the neighborhood of this scar-looking area, one sees one or more areas of hyperemia which, on being touched with a dry cotton pledget, or with the end of the speculum, bleed and first show their character as ulcers. In other cases, or perhaps at subsequent examination on the same case, the ulcer may be well defined as a deeply red area with granulating base and with congested vessels surrounding the area. In none of these cases has an individual ulcer area been more than a half centimeter in diameter, although two or three such ulcers have at times been grouped in a larger inflammatory area.

### Illinois Medical Journal, Chicago

*May, XXVII, No. 5, pp. 337-412*

46 Varicosities of Pampiniform Plexus. C. D. Center, Quincy.
47 Acidosis. J. W. VanDerslice, Oak Park.
48 Digestive Disturbances of Infancy of Proteid Origin. R. R. Ferguson, Chicago.
49 Digestive Disturbances of Infancy of Bacterial Origin. R. A. Black, Chicago.
50 Myoma and Pregnancy. H. F. Lewis, Chicago.
51 Pseudomyopia. A. C. Ragsdale, Metropolis.
52 Nitrous Oxid-Oxygen Anoci-Association in Practice. D. W. Deal, Springfield.
53 Chronic Gonorrhea in Male. J. L. Boehm, St. Louis.
54 Not Very Well Known Causes of Hematuria. J. Welfeld, Chicago.
55 Treatment of Gestational Variety of Puerperal Eclampsia. W. A. N. Dorland, Chicago.
56 Choanal Fibroma. N. H. Pierce, Chicago.
57 Blood Pressure in Life Insurance. J. W. Fisher, Milwaukee.
58 Uterine Inertia and Its Management. I. H. Eddy, Chicago.
59 Psychotherapy in General Practice. W. S. Sadler, Chicago.
60 Injection of Sphenopalatine Ganglion in Some of Commoner Diseases of Nose. H. L. Pollock, Chicago.
61 Preliminary Report on New Method of Treatment for Cerebrospinal Syphilis. G. C. Fisher, Chicago.
62 Anesthetics. F. C. Vandervort, Bloomington.
63 Normal Childbirth and How to Obtain It. R. E. Hillmer, Crescent City.

### Journal of Experimental Medicine, Lancaster, Pa.

*May, XXI, No. 5, pp. 401-524*

64 *Factors of Coagulation in Experimental Aplastic Anemia of Benzol Poisoning, with Special Reference to Origin of Prothrombin. S. H. Hurwitz and C. K. Drinker, Boston.
65 Histogenesis of Chronic Uranium Nephritis with Especial Reference to Epithelial Regeneration. J. Oliver, San Francisco.
66 Etiology of Goiter in Brook Trout. Effect of Feeding with Fresh and Stale Liver. D. Marine, Cleveland.
67 *Origin and Structure of Fibrous Tissue which Appears in Living Cultures of Adult Frog Tissues. G. A. Baitsell, New Haven, Conn.
68 *Nature of Anaphylatoxin. J. Bronfenbrenner. Pittsburgh.
69 *Wide-Spread Distribution of Diphtheroids and Their Occurrence in Various Lesions of Human Tissues. W. H. Harris and H. W. Wade, New Orleans.
70 *Diffusion and Survival of Poliomyelitic Virus. S. Flexner and H. L. Amoss, New York.
71 Rapid Production of Antidysenteric Serum. S. Flexner and H. L. Amoss, New York.

64. **Aplastic Anemia of Benzol Poisoning.**—Hurwitz and Drinker found that subcutaneous injections of benzol in rabbits produce marked destructive changes in the hematopoietic organs, especially in the myeloid tissue. Benzol poisoning registers a change not only in the formed elements of the blood, but also in the factors of coagulation. The circulating prothrombin is considerably reduced in amount and in most instances animals in which such a diminution occurs show aplasia of the bone marrow. The association of extreme aplasia of the marrow without a fatal diminution in the circulating prothrombin suggests one of two possibilities; either other tissues and organs in addition to the bone marrow are concerned with prothrombin formation; or a minimum amount of myeloid tissue suffices to maintain the quality of prothrombin above a dangerous level. The myeloid tissue plays no part in the production of antithrombin. Bone marrow activity is not essential for the production of fibrinogen.

67. **Fibrous Tissue in Adult Frog Tissue Cultures.**—In living cultures of various kinds of adult frog tissues, which have been made according to the hanging-drop method, Baitsell has seen in many cases, a transformation of the plasma clot by which it becomes entirely changed from a typical fibrin net both in appearance and structure. The changes in the fibrin net generally begin when the culture is from two to three days old. During these changes it appears that the elements of the fibrin net fuse or consolidate, and as a result a great number of fine wavy fibrils are formed which unite to form wavy bundles of fibers, and these freely intertwine and anastomose as they ramify through the area of the plasma clot.

Experiments show that the fibers which are formed are not outgrowths of the imbedded tissue. Also they are not

formed by an intracellular action, but arise directly by a transformation of the fibrin elements of the plasma clot. The transformation of the fibrin net will not occur unless it has come under the influence of living tissues or of living isolated cells. However, mechanical means, such as exerting tension on the clot with needles, may hasten the formation of the fibers. It is believed by Baitsell that such a reaction must play an important part in wound healing. A study of the relation between connective tissue fibers formed in wound healing and in embryonic development to the fibers formed in the plasma clot is being made by Baitsell and the results will be published later.

68. **Nature of Anaphylatoxin.**—The union of fresh serum of pregnant or immunized animals with the corresponding boiled protein (substratum) is accompanied by the formation of poisonous substances. The poison originates from the serum as a result of its autodigestion and not from the substratum. The process of autodigestion may be determined by the specific or nonspecific removal of the antitrypsin of the serum. The poisons originating from the serum are toxic only for homologous animals. The autodigestion of the serum, if allowed to proceed far enough may go beyond the toxic stage. The biologic properties of these poisons indicate their close similarity to the anaphylatoxin and suggest to Bronfenbrenner that the anaphylatoxin of Friedberger is a product of the autodigestion of serum and not of the protein outside of the serum.

69. **Distribution of Diphtheroids.**—Diphtheroids are widely distributed in nature. They are present in the air, on the body surface, and at times through contamination or are indigenous in the deeper tissues. Harris and Wade are of the opinion that diphtheroids constitute a broader field of saprophytism than is generally appreciated. While some strains may represent pathogens, their aggregate is patently not of the disease-producing variety. Diphtheroids can be cultivated from various pathologic tissues to which they bear no etiologic relation, such as lesions of tuberculosis, leprosy, blastomycosis, tertiary, syphilis and tumors of various types.

70. **Diffusion of Poliomyelitic Virus.**—According to Flexner and Amoss the ordinary virus of poliomyelitis present in aseptically removed brain tissue of paralyzed monkeys survives in an ascitic fluid kidney medium at the temperature of 37 C. for a period of at least twenty, but not thirty days. Under the conditions of moderate anaerobiosis, the minute micro-organism cultivated from poliomyelitic tissues tends not to develop in cultures from the brain tissue; hence its presence does not complicate the survival test. The diffusion of the ordinary poliomyelitic virus from a noncomminuted fragment of brain tissue into a surrounding medium of ascitic fluid is so slight as not to be detectable by inoculation experiments conducted with usual quantities of the fluid. The specific effects of the micro-organism cultivated from poliomyelitic tissues are not caused by an admixture in the cultures of the ordinary virus of poliomyelitis; hence they must be caused by the pathogenic action of the micro-organism itself. The minute micro-organism is therefore regarded by the authors as the specific microbic cause of epidemic poliomyelitis.

### Kentucky Medical Journal, Bowling Green

*May, XIII, No. 6, pp. 213-258*

72 History of Fads and Fancies in Medicines. J. E. L. Harbold, La Grange.
73 Diagnosis, Management and Treatment of Lobar Pneumonia. R. C. Adams, Salyersville.
74 Electricity in Treatment of Pelvic Diseases. J. A. Freeman, Crestwood.
75 Some Phases of Trachoma. L. E. Downs, Georgetown.
76 Renal Tumor; Report of Case. J. T. Reddick, Paducah.
77 Croupous Pneumonia. J. E. Wilson, Butler.
78 Catarrhal Pneumonia. S. M. Hopkins, Demossville.
79 Influenza. H. W. Watt, Pembroke.
80 Ruptured Bladder. P. K. McKenna, Mt. Sterling.
81 Metabolic Disturbances of Intestinal Tract with Especial Reference to Food Intoxication in Infancy. E. L. Gowdy, Campbellsville.
82 Physician as Business Man. G. G. Thornton, Lebanon.
83 Some Reflections on Healing Art. J. F. Young, Monticello.
84 Multiple Fracture of Lower End of Humerus — Open Operation. G. P. Grigsby, Louisville.
85 Duodenal Lavage; Report of Case. R. R. Elmore, Louisville.

### Lancet-Clinic, Cincinnati

*May 1, CXIII, No. 18, pp. 481-504*

86 Cincinnati General Hospital. What It Stands For. C. E. Caldwell, Cincinnati.
87 Medicolegal Aspect of Roentgenograms in Diagnosis and Treatment of Fractures and Joint Injuries. J. D. Trawick and D. Y. Keith, Louisville, Ky.
88 Mentally Defective Aliens; Medical Problem. H. A. Knox, Ellis Island, N. Y.
89 Hereditary Influences in Achondroplasia, Report of Case of Cesarean Section. J. E. Pirrung, Cincinnati.
90 Surgery and Life Insurance. M. Souchon, New Orleans.
91 Peace Movement. P. Zenner, Cincinnati.

### Medical Record, New York

*May 1, LXXXVII, No. 18, pp. 715-756*

92 Twilight Sleep. J. W. Brannan, New York.
93 *Propagation of Pure Vaccine Virus. H. Noguchi, New York.
94 *Chronic Dilatation of Stomach. W. H. Barber, New York.
95 American Thermal Springs: Their Therapeutic Uses; Radio-Activity of Springs in Germany, Austria and Virginia; With Regime for Patients with Gout, Rheumatism and Arthritis. G. Hinsdale, Hot Springs, Va.
96 New Application of Ergotherapy by Kellogg-Bergonie Method in Treatment of Obesity and Other Chronic Disorders. A. J. Read, Battle Creek, Mich.
97 Case of Diphtheritic Tracheobronchial Casts in Woman of 50 Years of Age. A. Levinson, Chicago.
98 Case of Round Cell Sarcoma of Meninges of Brain. G. A. Rueck, New York.
99 Carcinoma in Young. R. H. Fowler, Brooklyn.
100 Appliance for Producing Simultaneous Suction and Pressure for Use in Tonsil and Adenoid Operations. J. G. L. Borgmeyer and C. J. Larkey, Bayonne, N. J.

*May 8, No. 19, pp. 757-798*

101 Some Common Voice Troubles in Singers. I. W. Voorhees, New York.
102 Human Conservation. M. Glasgow, New York.
103 Modern Phases and Treatment of Basedow's Disease. O. Hensel, New York.
104 Treatment of Epilepsy from Metabolic Disturbances in Adolescence. T. A. Williams, Washington, D. C.
105 Nagelschmidt Modification of Kromayer Quartz Lamp in Treatment of Diseases of Hair and Scalp. R. W. Muller, New York.
106 Production of Sterility by Roentgen Ray. F. B. Granger, Boston.
107 Case of Rupture of Prostatic Urethra. S. W. Schapira, New York.

93. **Propagation of Pure Vaccine Virus.**—Noguchi has succeeded in propagating in the testicles of the rabbit and calf pure vaccine virus which is absolutely free of bacteria and preserves its virulence undiminished.

94. **Chronic Dilatation of Stomach.**—Chronic atonic dilatation, etiologically and therapeutically considered, Barber states, is a problem in pathologic physiology. Most cases are amenable to medical treatment. Many are relieved by suspensions. Of both of these classes many are entirely correctable physiologically by carefully planned gastro-enterostomies. The position of the stoma is vitally important and depends on the following: (*a*) For normal or hypertrophied stomachs the pylorus is the most efficient outlet. (*b*) For normal or hypertrophied stomachs the nearer the artificial stoma corresponds with the physiologic point of outlet the greater is the efficiency. (*c*) For "moderately" atonic stomachs or stomachs with 50 per cent. impaired prostaltic power, the efficiency of the stoma is probably greatest in the pyloric antrum, while (*d*) for the markedly atonic stomachs, with pronounced muscular insufficiency, the pendant stoma seems to date most efficient.

### Modern Hospital, St. Louis

*May, IV, No. 5, pp. 295-382*

108 Southern Pacific Company's Railroad Hospital. F. K. Ainsworth, San Francisco.
109 Medical Organization of State Hospitals for Insane. W. Mabon, Ward's Island, N. Y.
110 Relation of Ophthalmic Department to General Hospital. L. B. Whitham, Baltimore.
111 Agnew's State Hospital, Agnew, Cal. E. C. Reid, San Francisco.
112 Some Administrative Practices in Small Hospital. L. Miller, Portland, Ore.
113 Associated Out-Patient Clinics of New York. E. H. Lewinski-Corwin, New York.
114 Enthusiasm that Built Splendid Hospital. P. O. Clark, Wheeling, W. Va.
115 Care of Industrial Accidents in Clinic and Hospital. W. H. Lipman, Chicago.

### New Jersey Medical Society Journal, Orange

*May, XII, No. 5, pp. 209-260*

116 Some Disorders of Early Infancy. L. E. La Fétra, New York.
117 Treatment of Acute Suppurative Otitis Media in Infants and Children. C. C. Charlton, Atlantic City.
118 Reduction of Infant Mortality; How Can It Best Be Accomplished? G. E. Day, Collingswood.
119 Alcohol Drain Treatment of Puerperal Temperature. A. F. Dowd, Newark.
120 Tuberculin as Diagnostic and Therapeutic Agent in Tuberculosis. B. A. Pollak, Jersey City.

### New York Medical Journal

*May 1, CI, No. 18, pp. 869-924*

121 Plastic Surgery — Corrective and Palliative Repair — In Treatment of Malignant Disease. W. S. Bainbridge, New York.
122 Splenectomy. A. A. Kerr, Salt Lake City.
123 *Theory of Mechanism of Gastric and Pain Crises in Tabes. J. Byrne, New York.
124 What Electrotherapy Cures. H. H. Seelye, Atlantic Beach, Fla.
125 Clinical and Experimental Trichomoniasis of Intestine. K. M. Lynch, Charleston, S. C.
126 Post Partum Retrodisplacement of Uterus. T. H. Cherry, New York.
127 Relative Frequency of Morphin and Heroin Habits. C. B. Farr, Philadelphia.
128 Tonsillo-Adenectomy and Control of Hemorrhage. C. F. Adams, Trenton, N. J.
129 Elimination of Soluble Radium Salts Taken Intravenously and Per Os. H. A. Seil, C. H. Viol, M. A. Gordon, Pittsburgh.
130 Bacillus Bulgaricus in Diabetes Mellitus. P. Horowitz, New York.

*May 8, No. 19, pp. 925-980*

131 *Radical Cure of Errors of Refraction. W. H. Bates, New York.
132 Urinary Lithiasis. V. C. Pedersen, New York.
133 *Angina Pectoris Successfully Treated By High Frequency Currents. S. Tousey, New York.
134 Problem of Inebriety. E. H. Williams, Los Angeles.
135 Nephrolithiasis. G. E. Macklem, Detroit.
136 Night Terrors. A. Stern, New York.
137 Treatment of Sac in Inguinal Hernia. A. E. Sellenings, New York.
138 Proper Factory Ventilation and Its Effects on Worker. H. Laveson, Washington, D. C.
139 Cerebral Hemiplegia; Sequel of Diphtheria. E. M. Auer, Skillman, N. J.
140 Possible New Test for Cerebrospinal Fluid. B. Lemchen, Dunning, Ill.

123. **Crises in Tabes.**—The gastric and pain crises of tabes are regarded by Byrne as being primarily the result of a banking of potential in the neurons distal to the lesion, namely, in the ganglion cells. This banking of potential goes on with greater or less rapidity, depending on the activity of the metabolic processes, the character of the food, mode of life, atmospheric conditions, the degree of completeness of the block in conduction at the site of the lesions, etc., until the obstruction is no longer able to prevent the passage of impulses inward toward the cord. Then individual neurons, one or any number at a time, commence discharging, and impulses reach the brain, causing pains referred to the peripheral areas of distribution supplied by the discharging neurons. In the case of the vagal and glossopharyngeal neurons the afferent impulses impinge with greatest effect on the vomiting center, causing nausea, vomiting, and the distress that accompanies them. After repeated successive discharges the cell bodies become fatigued, the potential falls below the point necessary to force a passage at the site of the conduction block, and the attack ceases for a time.

As all the neurons, however, do not discharge simultaneously, since some gather or retain their potential while others are losing it, the attacks of gastric or pain crises do not pass off immediately, except in cases in which attacks of gastric crises are temporarily aborted by such agents as morphin, pilocarpin, apomorphin, eserin, etc., and here the neurons are, to a greater or less extent discharged simultaneously soon after the administration of the drug, so that it takes some time, varying from two to forty-eight hours, before the neurons can gather sufficient potential to force the block again. In cases in which the attack has lasted some time, and in some instances in which only a certain limited group of neurons are fully, or almost fully and equally charged, the administration of morphin or of sodium salts may discharge the accumulated potential so effectively that the regathering of potential may take a long time. In such cases one administration of a remedy may permanently abort an attack. In reality, however, remedies seldom cause complete suspension of the attack, but merely affect the simultaneous discharge of those neurons in which the potential is at, or near the point of spontaneous discharge. The attack really comes to an end only when the potential in all the ganglion cells has become so reduced that it will take a period of some length before any of the neurons can acquire sufficient potential to force the block. The duration of an attack of gastric or pain crises depends, therefore, rather on the simultaneity and equality of accumulation of potential rather than on the number of neurons involved. General exhaustion and fatigue of the body as a whole, as well as starvation, also aid in the spontaneous termination of an attack by preventing rapid reaccumulation of potential.

131. **Radical Cure of Errors of Refraction.**—Animal experiments made by Bates demonstrate: 1. The lens is not a factor in the production of accommodation. 2. Hypermetropic refraction is always produced by a strain of two or more of the recti by electrical stimulation or advancement, and is always prevented by relaxation of these muscles by tenotomy. 3. Myopic refraction is always produced by a strain of two obliques and is always prevented by relaxation of these muscles by tenotomy. 4. Atropin prevents, when injected deep into the orbit, the experimental production of errors of refraction. 5. The cause of all errors of refraction is a strain to see. The cure is accomplished by relaxation. Relaxation is secured by central fixation. Central fixation is obtained by eye training with the aid of the Snellen test card at 20 feet and by alternately practicing central fixation with a dot or a fine point at 20 inches or nearer. After central fixation is obtained, all errors of refraction are cured.

133. **Angina Pectoris Successfully Treated.**—Tousey cites a case of angina pectoris successfully treated by high frequency currents from ultraviolet ray vacuum electrodes and by vibration.

### Ophthalmic Record, Chicago

*May, XXIV, No. 5, pp. 223-276*

141 False Heterophoria and Heterotropia. E. E. Maddox, Bournemouth, England.
142 Sclerocorneal Seton in Treatment of Glaucoma. C. A. Wood, Chicago.
143 Case of Traumatic Enophthalmos. H. F. Hansell, Philadelphia.
144 Anterior Lens-Ring Following Contusion. Report of Case with Theory Relative to Its Pathology. T. H. Cates, Little Rock, Ark.
145 New Pair of Lid Retractors for Cataract Operation. D. T. Vail, Cincinnati.
146 Hole in Disc Associated with Vibration of Overlying Membrane. T. B. Holloway, Philadelphia.
147 Case of Reflex Ocular Disturbances Due to Impacted Third Molars. H. V. Dutrow, Dayton, O.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Edinburgh Medical Journal

*April, XIV, No. 4, pp. 241-320*

1 New Psychiatry. W. H. B. Stoddart.
2 Association of Pernicious Anemia with Subacute Combined Degeneration of Spinal Cord. B. Bramwell.
3 Outbreak of Septic Pharyngitis. A. Goodall.
4 Fracture of Radius and Rupture of Radial Artery in Chauffeur. R. C. Alexander.

### Indian Medical Gazette, Calcutta

*March, L, No. 3, pp. 81-120*

5 Surgical Survey of Casualties in Mesopotamia. C. H. Barber and E. E. Doyle.
6 Serodiagnosis of Syphilis. W. D. Sutherland and G. C. Mitra.
7 Studies in Malaria. (To be continued.) H. Stott.
8 Action of Quinin and Arsenic Preparations in Kala-Azar. S. L. Sarkar.
9 Significance of Arneth's Leukocyte Count. H. H. G. Knapp.
10 Heart Strain Among Sepoys. E. H. V. Hodge.
11 *Iodin and Vaccination. L. B. Scott.
12 *Right Scrotal Fecal Fistula (Hernia). W. Vost.

11. **Iodin and Vaccination.**—Iodin was recently extolled as a preliminary disinfectant of the skin in vaccination. Some experiments were therefore carried out under Scott's direction in the ordinary course of preparing calf vaccine at the Shillong vaccine depot. Among the calves being vaccinated

one was occasionally taken at random and prepared with iodin instead of by the usual method of cleansing the skin. Each iodin calf was thus vaccinated along with one or more others, with the same lymph and under the same conditions. The average yield of the iodin calves was 7.7 gm. and of the others 26.6 gm. Of the iodin calves, two developed so few vesicles that no useful amount of vesicular material could be removed. The other ten yielded from 2.0 to 25.5 gm. Of the 47 control calves, one yielded none and the remainder from 9.5 to 62.8 gm.

It was plain that iodin as used in this experiment seriously interfered with the development of vesicles. This was obvious to the eye without any calculation of the weight of lymph yielded. Instead of the usual thick crop, only a few scattered vesicles formed on the scarified area. The difference lay in the number of vesicles which developed and not in their size or quality. Those which did form were normal in appearance. In none of the iodin calves did vaccination actually fail altogether, but the success rate per puncture was reduced to about 25 per cent. instead of the usual 80 to 90 per cent. Only two of the iodin calves yielded anything like a good crop of vesicles.

12. **Right Scrotal Fecal Fistula.**—This was an ordinary case of reducible scrotal hernia of two years' duration in a boy of 12. Nearly a month and a half before the operation by Vost the hernia became swollen, irreducible and extremely painful, and the parents thought an abscess was forming and treated it locally for the same. Then it burst, and left a fistulous opening through which fecal matter began to pour out. The boy's general health was fairly good and he was passing feces both through the anus and scrotal fistula. The operation was successful. The opening in the bowel was closed and a Bassini operation for hernia was done.

### Journal of Obstetrics and Gynecology of British Empire, London

*October-December, XXVI, No. 4, pp. 177-264*

13 *Distribution and Significance of Parametrium. M. Moritz.
14 Origin and Phylogenetic Significance of Female Genital Passages. S. E. Wichmann.
15 Primary Echinococcal Invasion of Ovary, or Other Pelvic Hydatids Collected from Various Sources in Australia. H. C. T. Young and D. A. Welsh.
16 *Coxalgic Pelvis. H. Briggs.
17 *Etiology and Treatment of Hyperemesis and Other Forms of Pregnancy Toxemias. E. H. Tweedy.
18 Double Ureter Simulating Parovarian Cyst in Right Broad Ligament. C. Lockyer.
19 Case of Myomectomy During Pregnancy. M. H. Phillips.
20 Case of Fetal Death from Rupture of Velamentous Vessels. M. H. Phillips.
21 Acute Intestinal Obstruction Following Septic Miscarriage. W. F. Shaw.
22 Multilocular Cystic Tumor of Uterus. J. B. Hellier.
23 Case of Hydrometra. M. H. Phillips.
24 Double Uterus with Right Pyocolpos. W. E. Fothergill.
25 Three Cases of Rupture of Pregnant Uterus Through Scar of Former Cesarean Section. W. K. Walls and W. F. Shaw.
26 Marsupialization of Degenerated and Infected Fibroid. W. E. Fothergill.

13. **Significance of Parametrium.**—This tissue, according to Moritz, forms the vascular pedicle of the pelvic viscera. In it the vessels, nerves and lymphatics of the pelvis take their course. Its arrangement is similar to that of all mesenteries. By means of the sheaths covering these structures they are enabled to adapt themselves to the everchanging directions and dimensions of the pelvic viscera. The viscera themselves are further enabled to do this without undergoing any danger of interference with their blood supply. The densest part of this tissue is situated around the cervix uteri, and therefore that is the most fixed point of the uterus. The chief blood supply to the uterus lies just below this area. The result is that the uterus is enabled to undergo the remarkable physiologic changes to which it is subject without interference with its vascular supply.

The retroperitoneal pelvic connective tissues have been evolved in man, simultaneously with other modifications, on the assumption of the erect attitude. An examination of these tissues in lower animals (rabbits, cats, hedgehogs) shows that they are devoid of smooth muscle fibers, consisting only of a loose reticular tissue with large spaces filled with fat. The tailed monkeys possess a connective tissue which is still poor in smooth muscle and supporting elements but these are present in larger amounts than in the connective tissues of quadrupeds. The pelvic connective tissues of the anthropoid apes are exceedingly rich in smooth muscle and supporting tissue. The higher up we go in the scale the richer this tissue becomes in smooth muscle and the better it thus is adapted to the mechanical duty of keeping the pelvic viscera in position.

It is also worthy of note that the chief supporting elements of the tissue are developed conversely as the pelvic floor becomes more sphincteric in its action, and is less used for the purposes of movements of the tail. Also that these tissues become of a more highly specialized nature and assume more important functions with regard to the maintenance of the position of the pelvic viscera as the erect attitude is developed. It is worthy of note that the position of the uterus as regards anteversion or retroversion is also determined by the state of the parametrium to a considerable extent. A diseased parametrium, namely, a parametrium that has lost its tone or is poor in smooth muscle, in spite of the presence of round ligaments predisposes to retroversion. If a model of a uterus be fixed round its cervical segment by numerous strands of elastic, all having as near as possible the same tension as in a pelvis in the erect attitude, the model takes up a position of anteversion. Different areas of the elastic strands being loosed causes the model womb to assume different displacements. A strong contraction of the anterior strands will cause acute anteversion just as a slackening of this group of elastic or a pull of the posterior bands will cause retroversion. The effect of periodic changes in the sizes of the rectum and bladder will not lessen to any extent the value of this experiment. The important part this tissue plays in keeping the uterus in its normal position, therefore, is seen, and one realizes why retroversions are so common in cases of prolapse.

The structure of the connective tissue, namely, the extensible vessels, strengthened by elastic masses of smooth muscle, allows all the changes of pregnancy, of full and collapsed bladder and of rectum, etc., to take place without any vascular interference with the normal state of these tissues and without vascular disturbances.

16. **Coxalgic Pelvis.**—Five cases are cited by Briggs, all with lateral tilting of the pelvis. In each the left half of the pelvis, the diseased side, was raised. In four the right occipito-anterior and in one the left occipito-anterior were recorded as the positions of the vertex presentations. Natural delivery was accomplished in two, forceps were used in one, induction in one, craniotomy in one. Briggs believes that the conclusion is inevitable that the diseased side is raised and that the mechanism of labor is thereby favorably influenced in the moderately contracted coxalgic pelvis.

17. **Etiology and Treatment of Hyperemesis.**—Tweedy directs attention to the importance of the following clinical facts: 1. Food irritation is not a factor in increasing symptoms of toxemia of pregnancy, for croton oil has no tendency to aggravate symptoms. 2. While toxemic exacerbations may possibly arise from absorption of intestinal ferment, in practice this is found to be the exception rather than the rule, for violent vomiting may be induced or eclamptic seizures started in a few minutes after milk has been given, and before it could by any possibility have undergone fermentative change. The conclusion is forced on Tweedy that absorption of food particles during the earliest stages of their digestion are the responsible agents in hyperemesis and eclampsia.

Sterile milk or other foodstuffs, if injected directly repeatedly into the blood, is apt to exercise a poisonous effect. It is said that this poisonous effect is due to an absence of specific antibodies, for those present in the blood are incapable of rendering harmless the food particles until they have been modified by first passing through the mucous surfaces of stomach or intestines. In early pregnancy a foreign albumin appears in the blood and Tweedy suggests that the

normal food antibodies are interfered with thereby. Thus the early sickness of pregnancy becomes understandable; it may be considered Nature's effort to reject food incapable of proper neutralization. It is also probably eliminatory in its effects, for its occurrence in the early morning will remove from the system the digestive excesses of the previous day. When it fails to do this, thoroughly toxemic symptoms arise. In most instances tolerance to food is eventually established, but the extent of the failure of the food particle to unite with its antibody is the measure of the severity of the toxemia. The fact that kidney inflammation is rarely seen in the early months of pregnancy may be due to the efficient eliminatory action of morning vomiting. In the worst cases of hyperemesis the alarmed stomach fails to discriminate between harmful and harmless stimuli and endeavors to reject everything; even the presence of spring water can no longer be borne, and, indeed retching can be induced by mere suggestion.

In one case of hyperemesis Tweedy tried the effect of giving olive oil before food was taken. The treatment was based on the popular belief that oil taken before a meal will prevent the most unwholesome banquet and the worst wines from disagreeing; it is supposed to do so by preventing or at least lessening the rate of absorption. The patient aborted before any data could be obtained in respect to efficiency of the method. She is now again pregnant, and in no way suffers from untoward symptoms. She attributes her immunity to the taking of petroleum in the early morning, and declares if she omits to do so vomiting recurs.

### Sei-I-Kwai Medical Journal, Tokyo

*January, XXXIV, No. 1, pp. 1-4*

27 Pharmacologic and Chemical Study of Earth Worm. R. Mizoguchi.
28 *Experimental Study of Thyrotoxic Symptoms. T. Mori.
29 Observation of Kala-Azar in Chinese Child. S. Saito.
30 *Pathologic Meaning of Worms in Vermiform Appendix. Y. Matsuoka.

28. **Study of Thyrotoxic Symptoms.**—Mori produced artificially an inflammation of the thyroid in dogs and studied the subsequent symptoms. In some dogs paraffin (melting point 40 to 50 C.) was injected into the thyroid and in others after the same injection the thyroid was warmed for two to three hours, or iodid of potassium was given internally. Again, chlorid of calcium was injected into the gland instead of the paraffin. In all cases an inflammation of the thyroid with subsequent thyrotoxic symptoms was produced, and the author thinks the direct cause of the thyrotoxic symptoms was the resorption of the contents of the follicles.

30. **Pathologic Meaning of Worms in Vermiform Appendix.**—Matsuoka tried to determine whether the inflammation of the vermiform appendix can be caused by the worms which are frequently present in it, how often one meets the worms in the appendix, what changes they can produce in the tissues and what relation these changes have to the changes produced by the inflammation. He found the parasites or their eggs in 48 out of 103 removed appendixes; in 29 cases (28.27 per cent.) he found the oxyuris vermicularis and in 2 cases (1.9 per cent.) trichocephalus dispar. The oxyuris was found three times (9 per cent.) in 33 cases of acute appendicitis and twenty-six times (37.1 per cent.) in normal appendixes. Forty-five (43.7 per cent.) of the 103 removed appendixes were found to be normal. Parasites were found in 25 of these 45 cases (55.6 per cent.) and in 91.7 per cent. of these cases sent away from the surgical clinic. The 25 cases in which the parasites were found showed no signs of an inflammation although they were clinically diagnosed as appendicitis.

Matsuoka concludes, therefore, that the parasites do not cause appendicitis, although they produce symptoms which may be named appendicopathia parasitaria and which are characterized by the absence of fever and pain on pressure over the ileocecal region. The author's view is in opposition to that of Rheindorf, which accepts the causative relation between the parasite and appendicitis, and he thinks that the boring canals mentioned as of importance by Rheindorf are artificially produced slits in the tissues of the organ.

### Archives Mens. d'Obstétrique et de Gynécologie, Paris

*January, IV, No. 1, pp. 1-48*

31 *Vaginal Cesarean Section. P. Bar.

*February, No. 2, pp. 49-96*

32 *Delivery with Patient's Pelvis Deformed from Congenital Dislocation of the Hip Joint. (Sur l'accouchement dans les bassins viciés par luxation congénitale de la hanche.) L. Péry and Balard.

31. **Conservative Vaginal Cesarean Section.**—Bar remarks that Dührssen's vaginal cesarean section has never found favor among French obstetricians, but that he, Bar, has found it of great service when conditions called for immediate evacuation of the uterus, as in case of uncontrollable vomiting, in failing compensation in heart disease, or other indications calling for prompt relief from the pregnancy. He says it is beyond question that vaginal cesarean section is much less dangerous than abrupt dilation of the cervix with the Bossi instrumental dilator, for example, which lacerates the cervix. He even prefers the Dührssen technic for cases requiring early abortion, if the cervix is narrow and not flexible. He prefers it to bougies for primiparae under these conditions. With eclampsia in an advanced pregnancy, it permits the extraction of the child when the cervix of a primipara is still long and narrow. The results are excellent in such cases unless the child is unusually large. The proper moment for it under these conditions is at the eighth month or two weeks later. Bar does not care to apply this technic in placenta praevia.

He gives fourteen large illustrations showing the various steps of vaginal cesarean section; it makes a surgical opening into the uterus under complete control, in a comparatively harmless region, leaving nothing to chance. It can be done under local or general anesthesia, as he describes in detail. He does not attempt to dilate the cervix beforehand, but leaves a small drain between the cervix and the bladder, if there is any dread of a thrombus. The tampon is withdrawn from the vagina in fifteen or twenty hours, and the sutures are treated as after any colporrhaphy. With the technic illustrated, he remarks in conclusion, the operation is easy. It is only very rarely that there is any serious hemorrhage from the wall of the uterus if the child is of medium size and the lower segment of normal configuration. He has never had hemorrhage of this kind but once, and then it was easily arrested by drawing down the cervix until the bleeding vessel was seen and the bleeding arrested with a single stitch. There is scarcely any danger of hemorrhage when the operation is done under local anesthesia plus a little epinephrin.

There is some danger of injury to the bladder; Hauch has statistics showing that this occurred in 11 out of 257 cases, Peterson, in 9 out of 267, and Dach 7 in 76 cases. Chirié has also reported a case in which a fistula into the bladder followed the falling off of an eschar. Bar has never had any trouble in this line and thinks there is little danger of injuring the bladder while it is being detached unless the plane of cleavage has been obliterated by old inflammatory processes. The special danger for the bladder and also of rupture of the peritoneal vesicovaginal pouch occurs when the fetus is being extracted with forceps.

32. **Delivery with Pelvis Deformed from Dislocation of the Hip Joint.**—The two cases reported by Péry and Balard confirm the view that in such cases it is not the limp nor the dislocation that is the greatest obstacle to normal delivery but the atrophy which results from the congenital luxation. The extreme slant of the pelvis in one case did not seem to interfere with the delivery; the head engaged spontaneously at the first labor contractions. Such a slant would be of serious import if forceps had to be used as they would have to be introduced perpendicularly. In this case expulsion proceeded spontaneously and rapidly, and this is the rule in a pelvis with luxation of the heads of both femora. In the second case the congenital dislocation of the left hip joint had entailed considerable atrophy of the limb and of that side of the pelvis, with complete ankylosis of the joint. All the measurements were larger than in the first case except the external bis-ischiac or transverse diameter; this was 2 cm.

smaller, measuring only 9 cm., evidently the result of the atrophy of the left side of the pelvis, verified by roentgenography. This was accepted as a sign that delivery could not proceed spontaneously, and the woman was artificially delivered at eight and a half months, with excellent outcome for both mother and child.

### Presse Médicale, Paris

*April 15, XXIII, No. 16, pp. 121-128*

33 Attempts at Chemotherapy and Vaccine Therapy for Wounds in War. J. Danysz.
34 The Curve of the Reaction of Degeneration in Estimation of Injury and Prognosis in Wounds of the Nerves. (Quels renseignements nous fournit la réaction de dégénérescence dans les blessures des nerfs?) A. Zimmern.
35 *Diagnosis of Suppurating Arthritis After Fractures in War. Chaput.
36 Six Months' Experience at a Clearing Hospital. G. Bergasse.
37 Open Bridge Plaster Casts. (Plâtres à anses sans armature.) E. Pouliquen.

35. **Unsuspected Arthritis after Fractures.**—Chaput states that suppuration in the nearest joint after fracture of a long bone is common, but is frequently overlooked. Any fissure in the bone is liable to permit the suppuration to extend and involve the joint. Such fissures should be sought for with special care in operating on the fracture. Certainty can be attained by puncturing the joint and injecting enough of a 1:1,000 solution of methylene blue to distend the synovial membrane slightly. If there is a communication with the fracture focus, the pus at this point will become tinged with blue in a few seconds. Even when the joint is opened up, it may seem sound, but arthritis should be suspected if the bones are friable and the color of the cartilage, synovial sheaths and intra-articular ligaments is not quite normal.

### Berliner klinische Wochenschrift

*April 12, LII, No. 15, pp. 365-392*

38 Action of Gold Salts and Radiotherapy on Tuberculous Organism. G. Spiess and A. Feldt.
39 *Uremia. H. Strauss.
40 *Diphtheria and Scarlet Fever from Sociologic Standpoint. T. Benda.
41 Sphygmobolometry. (Die Sphygmobolometrie Sahli's und ihre Kontrolle.) G. Ollino.

39. **Uremia.**—Strauss remarks that the last ten or twelve years have seen considerable progress in our knowledge of retention of substances by the kidneys and of uremia in general, especially of the pseudo-uremia which does not show the high proportion of residual nitrogen in the blood that is characteristic of true uremia. He classifies pseudo-uremia as that with a tendency to convulsions and that with a tendency to stupor or delirium and high blood pressure, with or without symptoms of localized irritation or of deficit. There may also be dyspepsia and bilateral twitching, but these are never prominent in this type. In the convulsion type the seizures may be like those of epilepsy. They begin suddenly, and are most common with acute or subacute nephritis in children and youths. This type is closely analogous to puerperal eclampsia not only in the manifestations but in the lack of high residual nitrogen content. (In four cases he found only 40 to 60 mg. of residual nitrogen.) True uremia, with residual nitrogen between 120 and 150 mg. or higher, is encountered mostly with vascular nephritis, and thus occurs at all ages. The severer forms are met mostly in middle life or later, although the disease can be traced back into youth.

The residual nitrogen is thus important for the prognosis, as a high figure gives an unfavorable outlook, as a rule, other things being equal. He discusses the preferable technic for its determination in the blood and also for the urea, declaring that chemical examination of the blood serum affords the only reliable information as to maximal insufficiency of the kidneys. A host of pregnant facts are awaiting discovery, he exclaims, when physicians take the trouble to investigate the type of true or false uremia to which a case belongs, and discriminate more sharply. He gives a half-page table in which the clinical pictures in true uremia and in the two forms of pseudo-uremia are compared, listing sixteen groups of symptoms in each. The blood pressure in true uremia is generally increased, but it is very high in the arteriosclerosis type of pseudo-uremia and only moderately high in the other type.

40. **Diphtheria and Scarlet Fever from Sociologic Standpoint.**—Benda has been comparing the statistics for different districts in Berlin during the last three years, and discusses them from various standpoints. They show that diphtheria was more common among the poorer classes and scarlet fever among the well-to-do, proportionally. The mortality of both, however, is proportionally less among the well-to-do, but the individual predisposition is an important factor.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*April 3, XLV, No. 14, pp. 417-448*

42 The Wounds in the Present War. (Kriegsärztliche Beobachtungen.) A. L. Vischer and P. Ryhiner.

### Deutsche Zeitschrift für Chirurgie, Leipzig

*March, CXXXIII, No. 1, pp. 1-112*

43 *Anesthetization of the Abdominal Cavity. (Anästhesierung der Bauchhöhle.) L. Adam.
44 *Removal of Large Intrathoracic Goiters. W. Jehn.
45 Ileus from Tumor and from Internal Incarceration. (2 seltene Fälle von Ileus.) K. Stetter.
46 Operative Findings with War Wounds of Peripheral Nerves. F. Voelcker.
47 *Adhesive Plaster Dressing for War Wounds. (Ueber Heftpflasterverbände zur Beschleunigung der Heilung von Schusswunden.) E. Eisner.
48 Treatment of War Wounds of the Intestine. (Darmschüsse.) A. Krall.
49 *Tendon Plastic Operation for Paralytic Talipes. (Zur Behandlung des paralytischen Klumpfusses.) H. Matti.

43. **Local Anesthetization of Abdominal Cavity.**—Adam shows that for operations on the abdomen to be possible without pain, it is necessary to anesthetize the skin, the layers of the abdominal wall, the parietal peritoneum, the mesentery and the lesser omentum. Then he discusses the innervation and the points at which conduction can be blocked, and relates his experience with operations done without pain under paravertebral blocking of nerves. This does not include his operations for appendicitis or on one kidney or breast, done under paravertebral blocking of one side only. No disagreeable by-effects were noticed except in three cases; one patient had a hysteric spasm after the first injection, and two others grew pale and the pulse ran up to 120, but all returned to normal by the end of the operation. In another group of 95 cases, operations were done on the cecum under direct local anesthesia.

To anesthetize the entire abdomen it is necessary to inject the anesthetic to block the nerves from the fifth dorsal to the third lumbar vertebrae. Three injections each are made with one introduction of the needle, pointing it in different directions. An illustration is given to show the technic on the seated patient as practiced in Dollinger's service at Budapest. The experiences with it are said to have been very encouraging. The aim is to block the nerve at the point from which it controls the largest area. The patients do not feel the depression common after general anesthesia, and vomiting is extremely rare and never protracted. There is further no tendency to postoperative dilatation of the stomach nor to aspiration pneumonia. The numerous injecting points and the large amount of the anesthetic used, from 120 to 160 c.c. of the 1 per cent. solution of novocain, are drawbacks that may be reduced with improved technic. The experiences to date, however, show that local anesthetization of the abdomen can be realized.

44. **Large Intrathoracic Goiter.**—In Jehn's five cases at Zurich the goiter removed measured 6 by 10 by 11 cm. in one case, and 7 by 13 in another. The goiters weighed from 170 to 500 gm. All the patients were immeasurably relieved by the removal of the goiter, but one woman succumbed three weeks later to pulmonary embolism. The tumors were so vascular that it would have been dangerous to cut into them, so they were shelled out whole. In order to do this, the manubrium was slit and it spread at once enough for the purpose. The operation was much facilitated by being done

under positive pressure in Sauerbruch's air cabinet. The operation was under local anesthesia alone in four cases.

47. **Overlapping Adhesive Plaster Dressings for War Wounds.**—Eisner has revived this old method of treating wounds. He applies it when the region is beginning to heal and the temperature is normal or only slightly above. He found the method useful in particular for extensive, shallow wounds. The best results were obtained with an adhesive plaster made with admixture of scarlet red.

49. **Tendon Plastic Operation for Talipes.**—Matti reports the success in paralytic talipes of an operation in which a strip of the tendon of the peroneus longus is slit off and utilized to provide a second attachment for the tibialis anticus on the lateral margin of the foot at the head of the fifth metatarsal bone. This does not interfere in the least with the normal dorsal extension or supination action of the tibialis anticus, but it compensates perfectly for the pronation defect and hence the abnormal lifting of the side of the foot. He refrains from using the flexor or supinator muscles of the posterior group, when only the extensor and pronator group are at fault. Some cases may require shortening of the peroneus tendon or substitution of the peroneus function by grafting a lateral flap from the tibialis anticus on the tendon of the peroneus longus in the leg. Still other cases are corrected more smoothly by dividing the tendon of the peroneus longus, drawing it out through a buttonhole back of the head of the fifth metatarsal bone and grafting it on the tendon of the tibialis anticus above the ligamentum cruciatum, after tunneling under the fascia on the dorsum of the foot. The exact technic of various measures to meet different indications is described, with illustrations of a few typical cases of paralytic talipes, a sequel of poliomyelitis or of unknown origin.

### Medizinische Klinik, Berlin

*April 11, XI, No. 15, pp. 413-442*

50 Attenuated Criminal Responsibility from Standpoint of Military Discipline and Compensation. (Nervöse und psychische Erkrankungen im Kriege. II.) A. Westphal and A. H. Hübner.
51 *Hygiene in the Field. P. Kuhn and B. Möllers. Continued.
52 *Garments to Protect Against Typhus. (Schutzkleidung gegen Flecktyphusübertragung.) C. Flügge.
53 Plaster Bridge Casts for Fractures in War. (Behandlung von Schussfrakturen mittels Gipsbrückenverbänden.) O. Grasser.
54 Sympathetic Ophthalmia in War. C. Adam and Others.
55 Synthetic Camphor Ranks with the Natural. C. Bachem.
56 *Treatment of Pregnancy Disturbances on Basis of Faulty Metabolism. (Zur diätetischen und medikamentösen Beeinflussung der Schwangerschaft und zur Eklampsiebehandlung.) P. Rissmann.

51. **Hygiene in the Field.**—Kuhn and Möllers describe the arrangements enforced wherever the troops are quartered, to ensure the health of the troops and of the native inhabitants. Facilities for bathing are provided in remodeled factories, etc. After bathing, the men are usually given tea. Provisions are also made for sports and outdoor games, and prizes are offered, as this is considered better in this "war of nerves" than sitting indoors when off duty.

52. **Typhus.**—Flügge relates that typhus has been contracted at the prisoners' concentration camps in Germany by twenty-three of the attendants and twelve of the physicians, and that eight of the latter have died. Better methods of warding off vermin must be devised, and he suggests, with rubber gloves, a one-piece suit covering all but the head, with adhesive plaster to close the openings at wrists and neck. Where this is not feasible, the edges can be smeared thick with Canada balsam or other sticky substance that would catch vermin like sticky fly paper. He stands on a sheet in removing the overgarment and the whole is then wrapped up and sent to be sterilized.

56. **Dietetic and Medicinal Influencing of Pregnancy Disturbances.**—Rissmann expatiates on the changes in the metabolism which regularly accompany pregnancy. About two-thirds of all pregnant women suffer more or less from them, and the condition should be regarded as pathologic as much as in a person with gout or diabetes. With these, we do not wait for serious symptoms to develop before instituting dietetic measures, and this should be the rule also in pregnancy. Meat and stimulants should be used sparingly, and the stomach should never be overloaded and no constipation allowed. By this means, supplemented with ovarian extract and salts, it is possible to tide the patient along and never let the pathologic condition get so serious as to bring on eclampsia. It is on a plane with uremia and diabetic coma to which metabolic disturbances have been leading up. Eclampsia, he declares, never occurs without warning signals: The residual nitrogen is abnormally high, there is also retention of sodium and generally also of potassium. Hence, he emphasizes, saline infusion is contraindicated; sedatives other than morphin and chloral should be given, as morphin acts on the medulla first, while chloral is dangerous for the kidneys and heart. A narcotic should be selected that raises the threshold for stimulation of the brain and blocks sensory stimuli from reaching the consciousness. Once the convulsions have developed, the uterus should be evacuated without delay. Lumbar puncture has been advocated by many clinicians in the eclamptic form of pseudo-uremia, and in true "retention uremia," plenty of water by the drop method in the rectum. Intravenous infusion of an isotonic (4.5 per cent.) solution of grape sugar after venesection aids in the lavage of the blood.

### Münchener medizinische Wochenschrift, Munich

*April 6, LXII, No. 14, pp. 465-496*

57 Intoxication from Gases from Exploding Shells. (Vergiftung durch kohlenoxydhaltige Explosionsgase aus Geschossen.) L. Lewin.
58 *Serodiagnosis in Dermatology. (Mittels des Abderhaldenschen Dialysierverfahrens gewonnene Ergebnisse auf dem Gebiete der Dermatologie.) G. Stümpke.
59 *Simplified and Improved Technic for Esophagoscopy. (Die Sekretentfernung bei der Oesophagoskopie.) W. Sternberg.
60 Acute Pancreatitis. H. Mehliss. Commenced in No. 13.
61 Fatigue versus Exhaustion. (Erschöpfung und Ermüdung.) C. Jacobj.
62 Principles for Treatment of Wounds in War. F. F. M. Haenel.
63 *Epinephrin in Treatment of Bacillary Dysentery. F. v. Gröer.
64 *Symptoms of Psychic Deficiency After Wounds of the Brain. (Psychische Ausfallserscheinungen nach Hirnverletzungen.) W. Poppelreuter.
65 *Trephining the Olecranon to Drain the Elbow. (Zur Drainage des Ellbogengelenkes.) G. Doberauer.
66 Massage Under Superheated Air. (Heissluft-Massage.) A. E. Stein.
67 *Prognosis and Treatment of Abdominal Wounds in War. (Bauchschüsse im Kriege.) G. Perthes. Commenced in No. 13.
68 Vaccine Treatment of Gas Gangrene. L. Katharine.
69 Efficacy of Liquid Paraffin with or Without Admixture of Iodoform in Treatment of Wounds in War. (Einfaches, erfolgreiches, im Balkankrieg erprobtes Wundbehandlungsmittel.) Chrysospathes (Athens).

58. **Serodiagnosis in Dermatology.**—Stümpke has examined the serum from 200 patients with skin disease and hundreds of controls, following Abderhalden's technic. With gonorrheal epididymitis, prostate, epididymis and testicle tissue were digested almost constantly and in some cases also seminal vesicle tissue. In psoriasis there was digestion of kidney tissue, as also in recent generalized syphilis. With the latter, liver and spleen tissue were also digested. Most of the skin affections tested also showed digestion of kidney tissue; liver tissue was acted on likewise by serum from most of the cases of toxic dermatitis.

59. **Technic for Esophagoscopy.**—Sternberg's advocacy of the prone (abdominal) position for esophagoscopy was mentioned in these columns April 24, p. 1457. He here expatiates on its advantages in permitting the free outflow of secretions, and that the patient, in this position, can hold the tube himself and aid in other ways so that no assistant is required. By introducing a stomach tube to the point of the obstruction in the esophagus, negative and positive pressure can be alternated, thus releasing and pumping out all secretions.

63. **Epinephrin in Treatment of Dysentery.**—Gröer has found that epinephrin by the mouth has a remarkable action in quieting the abdominal pain and tenesmus which torment the patient in the severer cases of dysentery. By giving the epinephrin every one or two hours it is possible to keep the patients entirely free from pain. In an experience with 300 cases he found that even enormous amounts were borne without appreciable by-effects. The same action was apparent after intramuscular injection of epinephrin, but with this the

usual effects on the heart were apparent, which was not the case when given by the mouth; only the relief from abdominal pain, nausea, and singultus was realized then. Pain in stomach or bowel of non-dysenteric origin was not affected in a number of cases. Addition of epinephrin to tepid saline for flushing the bowel also had such a remarkably favorable action that it suggests the possibility that epinephrin may have a direct neutralizing action on the dysentery toxin. His own experience and that of Marie and Kassowitz have confirmed that epinephrin has a detoxicating effect on diphtheria toxin to a certain extent.

64. **Psychic Symptoms after Wounds of the Brain.**—Poppelreuter has had thirty patients with brain wounds under his care and supervision for months, and has thus learned a number of points with regard to deficit phenomena. Among those he emphasizes is that the capacity for figures may be impaired when there is no actual aphasia. Hence testing with figures is a peculiarly delicate test for injury of the brain. In one shell wound of the left inferior occipital lobe, the man was unable to do any sums in division although no other mental disturbance was apparent. In nearly all the cases of injury of the right hemisphere there was more or less loss of memory. One medical student thus had lost all memory of the chemical formulas and prescriptions he had learned in his eight semesters. Localized injury of the brain entailed not only the specific deficit phenomena but the whole personality was essentially modified. The results of reeducation and training have been very gratifying, hemiplegics are learning to use the typewriter, and the deaf are learning lip reading, etc.

65. **Draining the Elbow.**—A bullet ploughed through the olecranon and the facilities for draining thus realized were so unusually good that Doberauer since has systematically trephined the olecranon in all cases requiring drainage of the elbow. He extols the advantages of this technic as it not only drains the joint by gravity and permits ample access but it leaves the ligament apparatus intact and avoids all danger of injury of nerves. The functional outcome was thus surprisingly perfect even when a bullet or shell had injured the bone and suppuration had followed.

67. **Abdominal Wounds.**—Perthes relates that the largest majority of the abdominal wounds in this war prove fatal within three days. About 42 per cent. succumb of those reaching the field hospital. In fully half of those leaving the field hospital alive, no viscus was injured and naturally these recover. Many of the others succumb to later complications. It is possible that better results might be obtained with operative treatment by one skilled in abdominal operations if done within twelve hours, when the general condition does not indicate irreparable lesions.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*March 25, XXXVI, No. 24, pp. 369-384*

70 Crotalin in Epilepsy; Five Cases; No Appreciable Benefit. (Sul valore curativo del veleno del crotalo nell' epilessia.) G. Corso.

*April 4, No. 27, pp. 417-432*

71 *Associated Lymphoid and Myeloid Proliferation. (Le linfomielosi associate.) G. Ghedini.

72 *Landau's Color Test for Syphilis. (Studio della reazione di Landau nella sifilide.) G. Cappello.

*April 8, No. 28, pp. 433-448*

73 Painless Delivery Under Narcophin-Scopolamin; Seven Cases. (Il parto senza dolore.) E. Curti.

71. **Combination of Lymphosis and Myelosis.**—Ghedini remarks that the association of abnormal proliferation of the lymphatics with proliferation of the blood-producing organs is not admitted by some, but he cites four typical cases to establish its possibility. One is from his own experience and one was observed by Ollino, the others by Herz and Frank. In his case the myelosis came on in the course of chronic lymphosis, in two others the two seemed to develop together, and in the fourth case the lymphosis developed during chronic myelosis. Some were of the leukemic and some of the aleukemic type.

72. **Landau's Color Test for Syphilis.**—Cappello's experience with the Landau test has been extremely favorable. The findings in 41 cases were positive in 13, dubious in 4 and negative in 24 while the parallel Wassermann was positive in 11 and negative in 26. In 27 cases (65.8 per cent.) the two tests gave concordant findings, including 8 with positive reactions. The tests gave contradictory findings in 17.3 per cent. In the 14 other cases in which there was partial disagreement, the clinical manifestations sustained the Landau findings against the Wassermann in 6 cases, and sustained the Wassermann against the Landau in 2. In 4 cases of syphilis in which vigorous treatment had been given, the Landau was still positive in 3, while only 1 responded positively to the Wassermann, indicating that the Landau is more sensitive than the other. He says he followed Landau's second technic which he cites as follows, crediting it to the *Presse Médicale*, May 2, 1914: To 0.2 c.c. of the blood serum in a test tube he adds 0.1 c.c. of the reagent, represented by a 1 per cent. solution of iodin in carbon tetrachlorid. The mixture is set aside at room temperature for four hours. With normal serum the fluid is an opaque white, while syphilitic serum is clear and transparent. Cappello made up the reagent fresh each time, with serum not over six hours old, and free from hemoglobin. The only change he made in this technic was to use double the quantities of both serum and reagent.

### Policlinico, Rome

*April 11, XXII, No. 15, pp. 485-516*

74 Rapid Healing Under Neosalvarsan of Old Chronic Ulcus Rodens of the Vulva; Three Cases. V. Fisichella.

75 Forcing of the Heart and Its Consequences. (Lo sforzo del cuore e sue conseguenze.) P. Ercolani.

### Riforma Medica, Naples

*April 3, XXXI, No. 14, pp. 365-392*

76 Universal Oscillometer. A. Fulchiero.

77 *Diagnosis of Tumors of the Thymus. (Alcune forme di neoplasia timica.) A. Roccavilla. Commenced in No. 13.

78 Peritonitis Simulated by Suprarenal Hemorrhage. (Sindrome pseudo-peritonitica consecutiva ad emorrhagia traumatica di una capsula surrenale.) R. Mosti. Commenced in No. 12.

*April 10, No. 15, pp. 393-420*

79 Castellani Method of Preparing Typhoid-Paratyphoid Mixed Vaccine. F. P.-Titone.

80 *Operative Treatment of Sagging Liver and Gallstones. (Epatopessia e colecistostomia contemporanee per epatoptosi totale e calcolosi.) M. Francini.

77. **Thymus Tumors.**—Roccavilla describes a unique case of a tumor in the thymus—although Claude has recently reported a case resembling it in some respects in a man of 51 with paralytic myasthenia. He was under close medical observation for eight months but never presented any symptoms of pressure in the mediastinum, and yet necropsy revealed a retrosternal encapsulated primary epithelioma starting in the thymus. It had developed mostly to the right so there was no pressure on the trachea or large vessels. In Roccavilla's case the large tumor in the thymus was of a lymphosarcomatous and endotheliomatous nature. The patient was a man of 52 with paraplegia, and he was under observation only two months before his death. He succumbed to sepsis from a decubitus. The tumor had spread in various directions but had adapted itself to conditions so there was no compression of vessels or organs enough to induce symptoms, although the bodies of the four adjoining vertebrae had softened. The details of the case and necropsy findings were published at the time, July, 1913, and have attracted considerable attention. Roccavilla replies here to a number of questions asked or points raised by others, discussing the diagnosis of thymus tumors in general.

80. **Operative Treatment of Sagging Liver and Gallstones.**—In Francini's patient the sagging liver was part of a general tendency to ptosis of the viscera that had developed after repeated pregnancies at brief intervals. After a period of mild local pains, they became intense and radiated to the shoulder. The liver was fastened in place by Jeannel's technic, after which the gallbladder was opened to remove the gallstones and the lips of the incision were sutured to the wound. By this means all danger of infecting the new supports of the liver was avoided while the gallbladder supplied additional support.

### Brazil-Medico, Rio de Janeiro

*March 22, XXIX, No. 12, pp. 89-96*

81 Brazilian Nematelminth Worms. (Revisão dos acantocephalos brazileiros. I fam. Gigantorhynchidae Hamann, 1892) A. Neiva.
82 Facultative Blood-Sucking Power of Brazilian Bug. (Sobre o hematophagismo do Apiomerus Nigrilobus—Stal.) A. Carini and J. Maciel.
83 *Chorea in Pregnant Women. (Chorea gravidica.) O. Ayres. Commenced in No. 12.

*April 1, No. 13, pp. 97-104*

84 Echinococcus Disease in Rio. (Da presença do cysto hydatico no Rio de Janeiro.) L. Travassos and O. D'Utra.
85 *Tartar Emetic Specific Treatment for Leishmaniosis; Three Cases. O. Torres.

83. **Chorea in the Pregnant.**—Ayres emphasizes that chorea in pregnancy is probably connected with some disturbance in the ductless gland system. The mortality is always high and the prognosis grows graver when it is accompanied by mental disturbance. He proceeds to compare three cases he has encountered with the data in the literature, and gives the details of his cases. The first patient was a woman of 27 and the chorea came on with a stormy onset and coma for several hours. The choreic movements and convulsions continued a progressive course, only transiently influenced by symptomatic treatment of all kinds, including magnesium sulphate, thyroid treatment, various sedatives, neosalvarsan and lumbar puncture. Abortion was early induced but made no difference in the clinical picture, and the chorea progressed to a fatal termination. The woman had been previously healthy except for a tendency to constipation. The Wassermann was negative as likewise examination for gonococci.

The second patient, 18 years old, was also previously healthy and the pregnancy was only of one month's standing. The acute chorea proved fatal the ninth day. The necropsy findings are related in detail, but nothing was found that threw any light on the case. The third patient was 23, and she had noticed the choreic movements almost from the first after conception. At the fourth month they had become so violent she entered the hospital where the uterus was emptied after failure of all other treatment to relieve, and the chorea ceased at once. A year or two later she passed through a normal pregnancy without any return of the chorea or other mishap.

85. **Tartar Emetic in Leishmaniosis.**—Torres' three patients were men of 19, 40 and 43, and the leishmania ulcerations in the throat and nose were of several years' standing in all. A complete cure has been realized in one case under the intravenous injections of the antimony and potassium tartrate, and the others are well on the way to recovery. The first mentioned was given about forty injections, representing a total of 4.6 gm. tartar emetic. The leishman lesions in the mucous membrane are much harder to cure than those on the skin. The latter yield promptly to this treatment. It has no action on syphilis, and the measures found useful in syphilis have no effect on leishmaniosis. An interesting illustration of this, he adds, was given in a recent case of leishmaniosis in a child with inherited syphilis. The manifestations of the latter subsided under mercurial treatment, leaving the leishmaniosis unmodified, and this subsided under the tartar emetic. The solution for injection must be made up fresh and the course commenced with small tentative doses. Cautious local applications may hasten the cure.

### Semana Medica, Buenos Aires

*March 18, XXII, No. 11, pp. 341-372*

86 Principles of Biologic Psychology. J. Ingenieros.
87 Oculomotor Paralysis in Cuba. J. Santos Fernandez.

*March 25, No. 12, pp. 373-408*

88 Toxic Action of Certain Stains on Protozoa. (Toxicidad de los colorantes imino y fenolicos nitrados sobre algunas especies de protozoarios.) L. Guglialmelli and J. J. Carbonell.
89 Diego Ruiz, the Spanish Medical "Philosopher of Enthusiasm," 1882. (Notas de una personalidad de filosofo y de medico.) E. C. de Portocarrero.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*April 10, I, No. 15, pp. 1165-1256*

90 Radiotherapy of Cancer. (Stralenbehandeling in de gynaekologie. III.) T. H. Van de Velde.
91 Experimental Variations in the Heart Rhythm. (Over de hartrhythmiek. II.) S. De Boer.

### Hospitalstidende, Copenhagen

*April 14, LVIII, No. 15, pp. 353-376*

92 *Multiple Ligation of Varicose Vein. (Behandling af Varicer paa Underekstremiteterne efter Kuzmik-Shedes Metode.) K. Secher.
93 Chronic Nonmalignant Tumor of Salivary Gland. (Kronisk Spytkirteltumor.) H. v. Thun.

92. **Ligation Method of Treating Varices.**—Secher has applied to four patients the technic introduced by Schede and Kuzmik, and extols it as simple and free from danger, while it takes comparatively little time and the outcome is excellent and permanent. It can be applied in the home or office, and is thus particularly useful for the general practitioner. Kuzmik has reported its application in 155 cases; in most of them the varices were extremely pronounced and of long standing. Under general anesthesia a silk suture thread or catgut is passed around under the vein, without exposing the vein, and this is repeated at intervals along the vein. The ends of each thread are then tied over a roll of gauze or rubber tube, and the patient stays in bed one or two weeks. Schede applies the catgut threads at 2 cm. intervals and removes them after two or three days and lets the patient get up with a bandage the eighth day. Kuzmik uses silk, at 5 cm. intervals, and leaves the threads unmolested for twelve days.

### Hygiea, Stockholm

*LXXVII, No. 6, pp. 289-354*

94 *Cerebellar Symptoms in Myxedema. (Om lillhjärnssymptom vid myxödem.) M. Odin.

94. **Cerebellar Symptoms in Myxedema.**—Odin gives an illustrated description of a woman of 52, previously healthy and with healthy children, who had developed myxedema in the last ten years. The gait finally became slow and dragging, as likewise the speech, and certain groups of muscles displayed a tendency to catalepsy and other cerebellar phenomena. Under thyroid treatment of the myxedema the cerebellar ataxia and other symptoms promptly disappeared. Söderbergh has reported similar cerebellar phenomena in four cases, but Odin's was the only one in the group of five with what is called *mouvements démésurés*. All of them displayed pronounced catalepsy, contrasting curiously with the bright and intelligent mind in each case.

### Nordisches medizinisches Archiv, Stockholm

*Feb. 27, XLVII, Surgical Section No. 2. Last indexed April 3, p. 1202*

95 *Torsion of the Testicle; Reposition. (Fall von Hodentorsion.) A. Prag.
96 *Deformity of the Kidney from the Surgical Standpoint. (Nierenmissbildungen.) E. Key.
97 *Treatment of Metapneumonic Empyema. J. Borelius.
98 *Operative Fixation of Spine; Twenty-One Cases. H. Waldenström.
99 Utilization of Scapular Musculature in Treatment of Old Pleural Empyema. N. Hellström.
100 *Transpleural Resection of Cancerous Esophagus; Two Cases. F. Bauer.
101 Primary Localization and Mode of Spread of Tuberculous Process with Chronic Blood-Borne Tuberculosis of the Kidney. G. Ekehorn.
102 Fibrous Ostitis of Frontal and Adjacent Bones. (Revision eines Falles von "Sarkom des Sinus frontalis.") A. Krogius.
103 *Stomach Disturbances in Connection with Chronic Inflammation of the Omentura. (Gastropathia epiploitica.) G. Ekehorn.

95. **Torsion of the Testicle.**—Löfberg has reported three cases compelling operative relief, but in the case related by Prag the testicle was merely untwisted back into place. The torsion must have been of 360 degrees. The young man had had a similar attack a few months before, sudden intense pain in the abdomen and scrotum coming on in the night. Just as he reached the hospital all the pain vanished, and nothing abnormal could be found. The patient has been warned to apply without delay for operative fixation if there is any further trouble in this line.

96. **Malformations of the Kidney.**—Key reviews the various types of malformations of the kidney that have been encountered, and emphasizes the necessity for bearing in mind the possibility of a deformity of the kidney.

97. **Metapneumonic Empyema.**—Borelius relates that 27 were cured by operative treatment, of the 34 cases of metapneumonic empyema in his service at Lund since 1908. In 21 cases of septic empyema, 16 were cured and 2 of 7 with

tuberculous empyema. Four recovered of the 5 in the group treated with thoracentesis alone; they left the hospital in good condition in from thirty to forty-five days. In 12 cases thoracentesis had to be supplemented by thoracotomy and 10 recovered, but this required from thirty-six to 230 days, averaging 107. The 13 who recovered out of 17 under primary thoracotomy were in the hospital from twenty-one to 120 days. In the 21 septic cases, recovery in 16 was not complete until after intervals up to 420 days, and 5 patients died. In his 8 cases of metapneumonic empyema last year, 3 were pure pneumococcus cases and some recovered after thoracentesis alone. The technic for the operation and the aftercare are important factors in the outcome and thorough and early draining is indispensable. The figures cited all testify in favor of primary thoracotomy as giving the best result on the whole.

98. **Autobone Fixation of the Spine.**—Waldenström has been applying Albee's transplant method of operative treatment of deformed spine from spondylitis, only he regards the fixation as the important point. In order to render the fixation firmer, Waldenström implants the bone in a way to take the place of the destroyed bone and support the weight of the body above. He straightens the spine first and seeks to have it and the tibia transplant fused into a solid, unbending, straight whole after the operation. He keeps the patient on his back in the same plaster bed in which the correction of the hump has been realized. Then a plaster corset is worn for two more months. Weight bearing should be very slowly and gradually permitted, not allowing strain enough to bend the bone implant. He gives the details of his operation which differs in a number of points from Albee's technic. The spine is now straight and firm in all but three of his 21 cases thus treated; in seventeen the course is complete and the results most gratifying.

100. **Transpleural Resection of Cancerous Esophagus.**—The tedious operations in the two cases were carried through successfully, but one patient succumbed to pulmonary embolism a few days later and the other to suppuration around a perforation in the esophagus. The necropsy showed that the operation itself had been a success. Bauer advocates operating as the last resort in every case. After an opening has been made into the stomach and the patient's strength brought up by good nourishment, the chest should be opened and, if there is any chance at all, the esophagus should be resected.

103. **Stomach Trouble Secondary to Chronic Inflammation of the Omentum.**—Ekehorn reports two cases and cites one published by Destot in which chronic inflammation of the omentum caused pain in the stomach region, independent of the meals, and vomiting after eating. The pains and cramps lasted about a half hour at a time and returned several times a day or with free intervals of a few days. These disturbances had dragged through several years in one case. In the second case the onset was more stormy and the troubles more serious and persistent. Immediately after eating there were stabbing pains, even after a small glass of milk. This patient was a man of 37 and operative relief was obtained after three months. There was a tender area above the umbilicus in both, but roentgenoscopy was negative and nothing was found to suggest an ulcer. In both the omentum showed signs of chronic inflammation, and both were entirely cured by resection of the omentum. The first patient, a married woman of 31, had vomited after every regular meal for eight years; there has been no vomiting since the operation, and no pains in either case. Certain signs in the second case suggested that the inflammatory process in the omentum might be traced to appendicitis, but nothing was found to explain it in the woman.

## Ugeskrift for Læger, Copenhagen

*April 1, LXXVII, No. 13, pp. 477-542*

104 *Diagnosis and Treatment of Ulcer of the Lesser Curvature of the Stomach. (Ulcus curvaturae minoris ventriculi.) A. Borgbjærg. Commenced in No. 12.

105 Keratomalacia in Infants Fed on Buttermilk; Thirty-Five Cases in Seven Months. (Kærnemælkserncering og Keratomalaci.) H. Rønne.

*April 8, No. 14, pp. 543-576*

106 *Nutrient Enemas. (Rektalernæring.) V. Scheel and E. Begtrup.

107 Typhoid at Copenhagen in Last Fifteen Years. G. Behncke.

104. **Ulcer of the Lesser Curvature of the Stomach.**—Borgbjærg analyzes his experiences in 48 cases of pyloric ulcer, 13 of duodenal and 27 of ulcer in the lesser curvature, with special regard to the latter group in the total 88 cases. Thanks to roentgenoscopy, an ulcer in the lesser curvature is now readily diagnosed as a rule. In 14 cases of simple ulcer in the lesser curvature, periodical recurrence of the pains was unmistakable in 78.6 per cent., but there was no evidence of hypersecretion except in 14.3 per cent.; acidity was normal in 42.9 per cent., and below normal in 28. There was no pronounced retention of stomach content in any case, and the evacuation of the stomach was normal in 50 per cent. and only slightly retarded in 28.6 per cent. In 6 of the 14 cases there was vomiting but it occurred soon after eating and was of small amount, sometimes being only mucus. There had been hematemesis in 5 and melena in one case.

The most constant and characteristic symptom was pain in the cardia region sooner or later after eating. This pain seems to come on early when there is hypersecretion and late with subacidity. These data demonstrate that from the clinical symptoms alone it is impossible to determine the location of the ulcer or even that there is an ulcer. The disturbances were ascribed to everything but the right cause, and futile treatment had long been applied for the assumed neurasthenia, hysteria, colitis or gastroptosis. One or more of these affections may actually accompany and overshadow the ulcer. The patients grow more and more nervous as their general health is suffering from the ulceration, and the various measures applied fail to relieve their symptoms.

Localization of the pain in the lesser curvature region is instructive, as also tenderness at this point. In order to avoid suggesting this tenderness, he begins to apply pressure at a distance and gradually works up to the suspected point. Suspicious clinical findings become certainties when confirmed by the Roentgen rays. He found pronounced circumscribed pain on pressure in two-thirds of his 27 cases of ulcer in the lesser curvature, and in 71 per cent. of his 14 uncomplicated cases. This tenderness is particularly suggestive when it is to the left of the median line. In the 48 cases of pyloric ulcer, there was tenderness in 21, but always to the right of or on the median line, with one exception.

Adding his 27 cases to 27 from Pers' service, a radical operation was done in 20 of the 54, and the outcome seems to show that radical measures are more effectual while fraught with no more danger than conservative treatment. They sweep away all danger of cancer in the ulcer.

106. **Nutrient Enemas.**—Scheel tabulates the metabolic findings and other details in four out of sixteen cases thus investigated over several weeks on different types of nourishment by the rectum. The findings testify to the good absorption and utilization of suitable nutrient enemas, thus sparing the reserves in the body and supplying quite an essential part of the nourishment requirement. It was found that milk and eggs irritated the rectum and were not absorbed properly, not even when pancreas extract was given with them. The best results were obtained with meat amino-acids. The 10 gm. nitrogen were given with 50 or 75 gm. grape sugar in the course of the twenty-four hours fractioned in two or three enemas. About 250 c.c. of fluid was found the best amount for a single enema. The osmotic concentration was kept at about the same as that of the tissues, to avoid irritation. More than 25 gm. sugar should never be given at one time. He found the drop method impracticable for reasons he enumerates. The nutrient enemas were kept up for nearly three weeks. It is possible in this way to supply 400 or 600 calories daily. As the nitrogen balance is thus maintained, the reserves of fat in the body are drawn on for the balance of the calories required, and this fat loss can soon be made up again at the close of the course. All the patients had had hematemesis from a gastric ulcer. Most of the amino acids used were made in the hospital by long continued digestion of meat or milk by trypsin-erepsin.